



INSIGHTSIAS

SIMPLIFYING IAS EXAM PREPARATION

- I A S S E L F S T U D Y G U I D E -

SECURE SYNOPSIS

MAINS 2018

GS-III

JUNE 2018

© INSIGHTS ACTIVE LEARNING



NOTE: Please remember that following '*answers*' are *NOT* '*model answers*'. They are *NOT* synopsis too if we go by definition of the term. What we are providing is content that both meets demand of the question and at the same time gives you extra points in the form of background information.



Table of Contents

Topic: Indian Economy and issues relating to planning, mobilization of resources, growth, development and employment. Inclusive growth and issues arising from it.	6
Q) Discuss the importance of private sector participation in resource mobilization for India's infrastructure needs. Also, discuss various measures undertaken by the government to attract private investment. (250 words)	6
Q) Examine the various levels of shareholding under Companies Act. Analyze whether public listing of Air India will address its woes? (250 words)	8
Q) Discuss the key challenges to maintenance of fiscal discipline by the states. Examine the provisions of FRBM act that seeks to maintain fiscal discipline of the states. Also suggest alternatives to this end. (250 words)	9
Q) An agency like PARA is much needed to alleviate the NPA issue being faced by Indian banks. Discuss. (250 words)	11
Q) Discuss the controversies associated with the proposal of imposition of a sugar cess? Suggest some long term measures to deal with the problems of sugar industry? (250 words)	13
Q) Assess the performance of GST regime so far and discuss challenges going forward? (250 words)	15
Q) The draft on cross-border insolvency, recently released by the government will ensure an effective resolution mechanism in place for cross-border insolvency. Discuss. (250 words)	18
Q) On 1st of July, GST will celebrate an year of existence. Critically analyze the performance of GST regime so far? (250 words)	20
Q) E-commerce has opened new vistas of opportunity for women entrepreneurs in India. Comment. Also, discuss how Women Entrepreneurship Platform (WEP) launched by NITI Aayog aims to support women entrepreneurship. (250 words)	22
TOPIC: Effects of liberalization on the economy	24
Q) The experience of India with FTAs have taught us that we should proceed with extreme caution when it comes to RCEP negotiations. Analyze. (250 words)	24
Q) What do you understand by Personally Identifiable Information as per GDPR of EU. How do you think businesses will be impacted by the new regulations. Comment. (250 words)	27
Q) "Rules based trading system" is the ultimate casualty of the ongoing trade wars between some of the major economies of the world. Discuss. (250 words)	31
TOPIC : Indian Agriculture; issues; Technology missions; economics of animal-rearing.	33
Q) What is Zero Budget Natural Farming? Considering India's food needs, examine the impact of its implementation at a national level? (250 words)	33
Q) There is an urgent need to evolve a multi-pronged strategy to make agriculture viable, profitable and sustainable. Comment. (250 words)	36
Q) Every year we see that Indian farmers suffer both during surplus production and deficit production. Examine the reasons why and evaluate whether increasing MSP for crops would address the issue? (250 words)	39



Topic: Issues related to direct and indirect farm subsidies and minimum support prices; Public Distribution System-objectives, functioning, limitations, revamping; issues of buffer stocks and food security;	42
Q) Saddling private sector with the burden of MSP will hurt the interest of both the farmers and the industry. Critically analyze. (250 words)	42
Topic: Major crops cropping patterns in various parts of the country, different types of irrigation and irrigation systems storage, transport and marketing of agricultural produce and issues and related constraints; e-technology in the aid of farmers	44
Q) Discuss the challenges faced by the farmers in availing benefits under the PMFBY. Also, suggest some points to improve the performance of the scheme. (250 words)	44
Q) Critically examine the idea of predicting food price inflation through online prices in India. (250 words)	48
Q) Indian agriculture has entered the era of permanent surpluses, which is further worsening the condition of the farmers. Critically Comment. (250 words)	49
Topic: Infrastructure: Energy, Ports, Roads, Airports, Railways etc., Investment Models.	52
Q) Cooperative energy generation may present one of the most viable and self-sustaining solutions for rural communities. Discuss, in the light of India's universal electrification achievement. (250 words)	52
Q) Offshore wind generation offers several benefits over onshore wind energy generation but there are many challenges involved. Discuss. (250 words)	54
Topic: Science and Technology- developments and their applications and effects in everyday life	57
Q) The applications of blockchain go much beyond its role in crypto currencies. Examine (250 words)	57
Q) Discuss the dispute and legal progress on the Monsanto's patent case? Examine Delhi HC's decision's impact on Indian agriculture? (250 words)	60
Q) What do you understand by Ensemble Production system. Discuss the advantages of its recent introduction in India. (250 words)	62
Q) What do you understand by Geospatial Intelligence. Discuss how it acts as a force multiplier for the defence and security of a country. (250 words)	63
Q) Critically analyze the need to promote the emerging slew of shared mobility options and app-based ride providers in India. (250 words)	66
Q) Moving forward on the path to electrifying mobility in India is a complex issue and requires many precautions to be taken. Critically Analyze. (250 words)	68
Topic: Awareness in the fields of IT, Space, Computers, robotics, nanotechnology, biotechnology and issues relating to intellectual property rights.	71
Q) Keeping the interest of the citizens in mind, it is important to firm up a blueprint for price regulation of patented medicines in India. Critically analyze. (250 words)	71
Q) What do you understand by space debris. Also, discuss some of the technologies that could be employed in future, to tackle the problem. (250 words)	73
Topic: Conservation, environmental pollution and degradation, environmental impact assessment	76
Q) Discuss the importance of biofuels for India? Critically examine whether the national policy on biofuels will help India unlock its biofuel potential? (250 words)	76
Q) What are Bioplastics? Briefly explain the different variants of Bioplastics being used and promoted? Critically examine the impact of Bioplastics on the environment? (250 words)	79



Q) “Beat plastic pollution” the theme for World Environment Day, for its success in India, requires India to bring certain changes in its Plastic Waste Management Rules. Discuss. (250 words)	81
Q) Discuss some of the traditional water conservation structures/ techniques and examine their role in the present situation in India. (250 words)	84
Q) Discuss the aims and strategy envisaged by Charlevoix Blueprint For Healthy Oceans, Seas And Resilient Coastal Communities. (250 words)	86
Q) There is a need for a multipronged approach to reduce and ultimately phase out the consumption of plastics. Critically comment, in the light of the failure of the Plastic Waste Management Rules, to address the issue. (250 words)	88
Q) Discuss the efficacy of banning single use plastics in solid waste management? (250 words)	92
Q) Critically analyze the policy of enhancing the production and use of biofuels in airplanes, for a carbon neutral growth of the aviation industry. (250 words)	94
Q) Discuss the EIA guidelines for construction projects in India? Examine whether they need to be made more stringent in light of the recent protests in Delhi against the cutting down of trees? (250 words)	96
Q) A recent report has highlighted uranium contamination in India’s groundwater. Discuss the causes, its effects and ways to address the issue? (250 words)	99
Topic: Disaster and disaster management.	101
Q) It is not deficit monsoon, rather the lack of policies and mechanisms to drought-proof susceptible areas that has turned the situation in India so severe. Examine. (250 words)	101
Q) Storms are the new normal for India and provide several lessons for disaster preparedness. Examine (250 words)	104
Topic –Various Security forces and agencies and their mandate.	106
Q) Discuss the role of BSF in protecting the country’s borders and it’s sovereignty. (250 words)	106
TOPIC: Linkages between development and spread of extremism; Role of external state and non-state actors in creating challenges to internal security.	107
Q) Discuss the role of SFIO in tackling white collar crimes? Examine its weaknesses? (250 words)	107
Q) Kashmir has proven to be an intractable challenge for the Indian state and requires a fresh strategy. Critically analyze. (250 words)	109
Topic– Challenges to internal security	112
Q) India’s defence production is closely linked to DRDO’s fate. Discuss and critically examine the recent steps taken by government to bolster DRDO’s performance? (250 words)	112





General Studies Paper - III

Topic: Indian Economy and issues relating to planning, mobilization of resources, growth, development and employment. Inclusive growth and issues arising from it.

Q) Discuss the importance of private sector participation in resource mobilization for India's infrastructure needs. Also, discuss various measures undertaken by the government to attract private investment. (250 words)

Reference

Why this question

India has huge infrastructure needs. Approximately 200 billion rupees are required to be invested in infrastructure every year. However, raising investment is not an easy task and government has tried to rope in private investment for this purpose. The issue is related to GS 3 syllabus under the following heading-

Indian Economy and issues relating to planning, mobilization of resources, growth, development and employment.

Directive word

Discuss- we have to write at length about the key demand of the question- importance of private sector participation in resource mobilization for India's infrastructure needs and measures undertaken by the government to attract private investment.

Structure of the answer

Introduction- *mention the corpus of investment required and investment raised, vis a vis infrastructure needs of the country.*

Body-

- *Discuss why private sector participation is needed in resource mobilization for infrastructure needs. E.g government revenue is limited, private investment spurs growth and brings technology and innovation (in ideal situation) etc.*
- *Discuss the steps taken by the government to increase private sector participation in resource mobilization for the country's infrastructure needs. E.g BAMII, NIIF, Credit Enhancement Fund for raising bond ratings issued by infra companies, the New Credit Rating scale for infrastructure projects, InvITS, BOT etc.*

Conclusion- *Form a balanced and concise conclusion based on your discussion and suggest a way forward.*

Importance of private sector participation in resource mobilization:

- Developing at an extremely fast pace, **India's Infrastructure Sector has received an investment of about \$1 trillion in the period from 2007 to 2017, of which, more than a third of this capital was contributed by the private sector.**
- India needs around \$4.5 Trillion investments in the Infrastructure sector by 2040. Government cannot invest so much so private investment is necessary.
- Private sector-led industrial development plays a significant **role in bringing about the much needed structural changes that can set the economies of poor countries on a path of sustained economic growth.**
- Industry provides an **ecosystem for entrepreneurship, promotes business investment, fosters technological upgrading and dynamism**, improves human skills and creates skilled jobs, and through inter-sectoral linkages establishes the foundation for both agriculture and services to expand.



- Industry, by providing decent jobs and expanding the fiscal revenues needed for social investments, can **boost capacity for inclusive development**, creating decent work for all, improving health and education systems and living standards, thus alleviating poverty, socio-political tensions and tackling the root causes of migration.
- Businesses will be essential contributors to the **establishment of a circular economy, through more resource efficiency and effectiveness, cleaner production and better waste management**, and to the fight against climate change through more energy efficiency and renewable energies.
- Private participation inculcates the **habit of saving and investment from the grassroot level itself**. It gives opportunity for normal public to invest in projects through InvITS, REITs, Mutual Funds and so on.
- **Private investment brings with itself best of technology and innovation.**

Measures taken:-

- Government has taken several steps to encourage investment by private sector for development of infrastructure like
- Launching of innovative financial vehicles such as Infrastructure Debt Funds, Infrastructure Investment Trusts/Real Estate Investment Trusts
- Laying down a framework for issuance of municipal bonds
- Relaxation in External Commercial Borrowing (ECB) norms
- Mainstreaming of Public Private Partnerships (PPPs) across infrastructure sectors
- Periodical review of Harmonized Master List of Infrastructure Sub-sectors
- Establishment of National Investment and Infrastructure Fund (NIIF)
- Relaxation of norms for Employees' Provident Funds Organization (EPFO)/pension funds for infrastructure sector
- Bringing in 5/25 scheme to extend long tenor loans to infrastructure projects, take-out finance and flexible structuring
- Schemes such as the Brownfield Asset Mobilization for Infra Investments (BAMII)
- Credit Enhancement Fund for raising bond ratings issued by infrastructure companies
- New Credit Rating scale for infrastructure projects creates opportunities for private investors, thereby promoting a steady flow of financial resources into this sector
- Launched the 'Make in India' programme in 2014 to boost investments in the manufacturing sector. Subsequently, it took steps like FDI reforms, initiatives for quick approvals and clearances, bringing insolvency and bankruptcy code and the Goods and Services Tax to push private investment, particularly in manufacturing.
- Crisil Limited launched India's first 'investability' index so that it would become a credible national benchmark something that would help spur private investment in the sector.

Issues:-

- **Investments in the corporate sector also witnessed a fall** from 16% in 2008 to around 10% in 2016, due to **debt burdens, slowdown in private credit and twin balance sheets problems in the banking and corporate sectors.**
- **Stalled projects** weakened the balance sheets of corporations and public sector banks and, in turn, limited private investment and banks capability to lend.
- New investment realisation rate in transport infrastructure sector is falling since 2008 mostly due to issues like **land acquisition, environmental clearances and other market conditions.**
- **Lot of time is taken to analyse and deal with sector specific problems** particularly in labour intensive sectors like construction, real estate, steel, power etc.

Way forward

- Problem of stressed assets in banking and the over-leveraged balance sheets of promoters needs expeditious resolution



- The bond markets need to be deepened to reduce dependence on traditional banking, while, importantly, the public-private partnership (PPP) model needs to be revived.

Q) Examine the various levels of shareholding under Companies Act. Analyze whether public listing of Air India will address its woes? (250 words)

Financial express

Reference

Why this question

Now that the idea of privatization of Air India has come a cropper, the focus has shifted to alternate solutions which will address the troubles plaguing the airlines. In this backdrop, the suggestion by NITI Ayog has to be analyzed in depth.

Key demand of the question

The question first focuses on the theory of various levels of shareholding such as 25%, 51% etc and the impact it has on shareholders rights. Thereafter, the suggestion that public listing of AI will address its issues needs to be analyzed in depth. The pros and cons of the move has to be brought out along with the way forward.

Directive word

Examine – When you are asked to examine, you have to probe deeper into the topic, get into details, and find out the causes or implications if any .

Analyze – When asked to analyze, you have to examine methodically the structure or nature of the topic by separating it into component parts and present them as a whole in a summary. When you are asked to analyze, you have to examine each part of the problem. It is a broader term than 'Examine'.

Structure of the answer

Introduction – *Mention that the recent attempt at privatization of AI saw no interested parties coming forward and thus, alternatives are being looked into.*

Body – *First bring out the various levels of shareholding under Companies Act and the impact it will have on shareholder's rights.*

Thereafter, explain the suggestion by NITI Ayog regarding public listing of AI. Highlight in brief the woes of AI that needs course correction. Analyze whether listing of AI which will grant autonomy to the board will help in improving the Balance Sheet of AI. Bring out the pros and cons

Conclusion – *Present a fair and balanced view and the way forward.*

Background:-

- Important issue in an merger and acquisition deal for acquisition of shares is the level of shareholding a shareholder must have and the related rights that come along with it.

Various levels of shareholding under companies act :-

- Under the Companies Act, 2013 there are different levels of shareholding.
- Under the Act, a shareholder holding even a single share has a right to attend the shareholders' meeting, right to be counted towards quorum, right to speak at the general meeting, right to vote, right to get dividend when declared by the company and all other shareholders' right up to her entitlement of shareholding. For example, entitlement to bonus shares or rights shares issued by the company
- The real rights to a shareholder are not given until the shareholding touches 10%. This is because with 10% or more shareholding, the shareholders either singly or in a group are eligible to file for oppression and mismanagement against the majority and the management of the company, should the shareholders feel the



need to file such a case looking at company's operations. **They can also initiate class action as provided under Section 245 of the Act**

- Right to stop or block a resolution comes only a shareholder holds more than 25% shareholding (it could even be 25% plus one share). With such shareholding, the shareholder can block special resolutions.
- **Shareholding of over 50% (it could even be 50% plus one share):-**
 - With this, the shareholders gets an ability to manage most of the affairs of the company. This is because it is in a position to pass ordinary resolution However, **the shareholder will still not be able to pass any special resolution on its own. That will only be possible if the shareholder holds at least 75%.**

Public Listing of Air India:-

- Recently NITI Aayog vice-chairman has suggested that government list Air India

Why public listing is necessary:-

- Once there is a wide shareholding Air India will become truly autonomous and could get a private corporate board
- Once the government's shareholding in Air India is below 51% the usual shackles on its functioning like having to tender for everything will be removed;
- If it has a top-class autonomous board, the airline will find it easier to turn around

Concerns:-

- **Questions whether the government will let a board be autonomous:-**
 - Experts opinion is that that the oil marketing companies put their petrol/diesel hikes on hold for the state elections and then HPCL are recent examples of how the government and independent boards do not quite go together and all these firms have supposedly independent boards.
- Air India's biggest problem right now seems to be its **inefficient and bloated work force.**
 - Kotak Institutional Equities estimates that, in FY17, Air India's staff costs were 1.3 times those of Indigo and other expenses were 2.4 times.
- In any company, **listed or unlisted, it is the duty of the shareholders to inject the equity required to keep it afloat.** Air India needed Rs 4,000-5,000 crore a year of cash infusions when oil prices were low, **so the number is likely to have risen significantly by now. So it is unlikely that private investors will buy a stake in Air India.**

Way forward:-

- Government need to completely exit the airline
- Finding a solution, through a government-funded VRS, to the airline's large and inefficient work force

Q) Discuss the key challenges to maintenance of fiscal discipline by the states. Examine the provisions of FRBM act that seeks to maintain fiscal discipline of the states. Also suggest alternatives to this end. (250 words)

Financial express

Why this question

The maintenance of Fiscal discipline by the states is critical for stability of the economy. Economic survey last year had discussed this issue in depth. The tools at our disposal towards this end needs to be understood and analyzed.

Key demand of the question

The question demands us to first explain the key challenges which impact the ability of the state government to maintain their fiscal discipline. Next, we have to discuss in detail the provisions of the FRBM Act which tries to bring in fiscal discipline among the states and the effectiveness of those



provisions. Finally, if any alternative is available which will help us achieve this end in a better way, is to be brought out.

Directive word

Discuss – The various issues faced by the states in maintaining fiscal discipline needs to be brought out.

Examine – When you are asked to examine, you have to probe deeper into the topic, get into details, and find out the causes or implications if any .

Structure of the answer

Introduction – Briefly explain why maintaining fiscal discipline by the states is necessary.

Body -Bring out the position with respect to Fiscal Deficit of the various states and whether or not states are maintaining fiscal discipline. Discuss the challenges in maintaining fiscal discipline by the states. The provisions of the FRBM Act such as checks on fiscal deficit of the states, their ability to borrow etc. Examine whether these provisions have worked. Finally, suggest some alternative – such as utilizing market forces to push states towards fiscal discipline by linking their ability to mobilize resources from the market by linking it to adherence to fiscal standards.

Conclusion – Present your view and the way forward.

Background:-

- Fiscal discipline is essential to improve and sustain economic performance, maintain macroeconomic stability, and reduce vulnerabilities. Discipline is especially important if countries, industrial as well as developing, are to successfully meet the challenges, and reap the benefits, of economic and financial globalization.

Key challenges to maintenance of fiscal discipline by the states :-

- **Revenue surplus target is seldom met** even while the budgeted numbers make this assumption.
- **Fiscal deficit slippages are common** for some of the states and while some keep a margin when budgeting, others run the exercise at the threshold level, which **forces them to cut discretionary expenditure to ensure that the targets are met.**
- **Decisions taken at the political level, like loan waivers, can jeopardise deficits.**
 - **Populist schemes could be introduced** during election time that could upset the revenue budget.
- Some ongoing pressures would come **from periodic salary revisions** that are a part of the system.
- The flow of funds from the Centre is important as, with GST now in place, **it is difficult to raise tax rates in areas that were within their purview earlier.** Absence of alternative streams of revenue is a challenge for the states in the new GST setup.
- **States may have to cut down on discretionary spending** to meet targets. This is often done to ensure that the FRBM norms are being adhered to.
- The guarantees given to state PSEs will have to end, or they will put pressure on state finances. This will require some stern action. The **UDAY loans** have already added to the debt of state governments and most PSUs making losses.
- The **pressures from pensions** that get revised at the central level, and then get replicated by state finance commissions, can put more pressure on their ability to maintain their fiscal propriety.

Provisions of the FRBM Act which tries to bring in fiscal discipline among the states :-

- The Government notified FRBM rules in 2004 to specify the annual reduction targets for fiscal indicators.
- The FRBM rule specifies reduction of fiscal deficit to 3% of the GDP by 2008-09 with annual reduction target of 0.3% of GDP per year by the Central government.
- Similarly, revenue deficit has to be reduced by 0.5% of the GDP per year with complete elimination to be achieved by 2008-09. It is the responsibility of the government to adhere to these targets.



- The Central Government should not provide guarantees in excess of 0.5% of GDP in any financial year, beginning with 2004-05
- The Central Government should not assume additional liabilities in excess of 9% of GDP for financial year 2004-05 and progressive reduction of this limit by at least 1 % point of GDP in each subsequent year.

Analysis:-

- The implementation of FRBM Act/FRLs improved the fiscal performance of both centre and states.
- The States have achieved the targets much ahead the prescribed timeline.
- Government of India was on the path of achieving this objective right in time. **However, due to the global financial crisis, this was suspended and the fiscal consolidation as mandated in the FRBM Act was put on hold in 2007-08.**
- FRBM act has been violated more than adhered to since its enactment. **The target fiscal deficit to GDP ratio of 3% for the Union government was achieved only once, in 2007-08, when it was 2.5%. That achievement has yet to be emulated again.**
- The FRBM Act was amended twice, in 2012 and 2015. The revisions in 2015 shifted the date for achieving the 3% target to 2017-18. By this year, the amended revenue deficit target was put at 2% of GDP.
- Budget 2018-19 has proposed amending the FRBM Act again, which will shift the target of 3% fiscal deficit-GDP ratio to end-March 2021. No target has been set for revenue deficit.
- Recently NK Singh committee

Towards fiscal discipline, the government may carry out the following steps to improve fiscal consolidation:

- Improving tax realisation by reducing tax avoidance, eliminating tax evasion, enhancing tax compliance etc.
- Enhancing tax GDP ratio by widening the tax base and minimizing tax concessions.
- Extending Direct Benefit Transfer scheme for more subsidies and better targeting of government subsidies.
- The possibility of adopting a target range rather than a specific number which would give the necessary policy space to deal with dynamic and volatile situations such as the one India currently faces
- The NK Singh committee suggested a draft *Debt Management and Fiscal Responsibility Bill, 2017* to replace the earlier Fiscal Responsibility and Budget Management Act, 2003 (FRBM Act). The most notable recommendations are as follows:
 - The committee asks the governments to continue on the fiscal and revenue deficit targets but they should use debt as primary target to fiscal policy instead of deficits. The government should target 60% debt-GDP target with a 40% limit for the centre and 20% limit for states to be achieved by 2023.
 - The government should create an autonomous **Fiscal Council** with a chairperson and 2 members appointed by central government for four year term. The functions of the fiscal council would be to prepare multi-year fiscal forecasts, recommend changes in fiscal strategy, improve quality of fiscal data and advising the government if it needs to deviate from fiscal targets.
 - The government can also deviate from the path on advice of Fiscal Council in cases of national security, war, calamities and collapse of agriculture etc.

Q) An agency like PARA is much needed to alleviate the NPA issue being faced by Indian banks. Discuss. (250 words)

The hindu

Why this question

The idea of PARA discussed in depth in last year's economic survey has again gained traction. Understanding what PARA is, and how it can help in alleviating the stubborn problem of bad loans is thus important.



Key demand of the question

The question expects us to first explain what PARA is and how will it function. The main focus of the question is on understanding how effective PARA will be in dealing with the problems of bad loans. Both the hits and misses need to be brought out.

Directive word

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.

Structure of the answer

Introduction – Explain the problem of bad loans and the suggestion of PARA to tackle this problem

Body

- Explain what PARA is and how will it function
- Highlight why an agency like PARA will be effective in tackling the problem of bad loans. These reasons have been discussed in detail in last year's economic survey. Have a look.
- Explain why PARA might not be successful

Conclusion – Emphasize on the importance of resolving the problem of bad loans and whether PARA is the way forward.

Background:-

- The Central government has revived the idea of setting up an asset reconstruction or asset management company, a sort of 'bad bank'. This agency has been proposed in Economic Survey 2016-17.

PARA:-

- Public Sector Asset Rehabilitation Agency would take on public sector banks chronic bad loans and focus on their resolution and the extraction of any residual value from the underlying asset.
- Will be an independent entity that will identify the largest and most vexatious NPA accounts held by banks, and then buy these out from them.
- **This would allow government-owned banks to focus on their core operations of providing credit for fresh investments and economic activity.**
- Unlike a private asset reconstruction company, a government-owned bad bank would be more likely to purchase loans that have no salvage value from public sector banks. **It would thus work as an indirect bailout of these banks by the government.**

Positives:

- Hiving off stressed loan accounts to a bad bank **would free public sector bank balance sheets from their deleterious impact and improve their financial position.** If managed well, a **bad bank can clean up bank balance sheets and get them to start lending again to businesses.**
- By consolidating problem accounts across banks, the PARA is expected to solve :-
 - Can effect speedier settlements with borrowers by cutting out individual banks.
 - As a single large lender, it can drive a better bargain with borrowers and take more stringent enforcement action against them.
 - PARA is expected to raise capital for its buyouts by issuing government securities, tapping the capital markets or receiving a capital infusion from the RBI.
- **Why its necessary:-**
 - The stockpile of bad loans has had several ill-effects on the economy at large. One, with 16.6 per cent of their loan book tied up in stressed assets (bad and doubtful loans), banks have been fighting shy of new lending. **This is constraining new investments in projects that can power the economy.** Even if the



Government were to infuse fresh capital into public sector banks, there's worry that this may go to write off older bad loans rather than kick-start lending.

- **Two, public sector banks, which hold over 70 per cent of all deposits, are the worst hit by the bad loan problem.** For some of these banks, the provisions for bad loans have already overtaken operating profits, leaving them short of capital to sustain operations.
- Three, high NPAs force banks to keep their lending rates high to boost their profits.
- **PARA is expected solve all these problems at one stroke, by relieving the banks of their NPAs and expediting ways for the corporate borrowers to settle their debts.**
- **For depositors:-**
 - As a depositor, PARA will mean greater safety of your deposits with the tottering public sector banks.
 - As a taxpayer, it is your money that the Centre uses to recapitalize public sector banks .By moving large problem accounts to PARA, the government can separate the capital infusion exercise from the clean-up exercise. **PARA can raise money from institutional investors rather than looking only to the Government.**
 - As an honest borrower, bad loans weighing on bank balance sheets mean higher interest costs and slower transmission of RBI rate cuts. **Once stressed assets are sold to PARA, the RBI can lean harder on banks to pass on its rate cuts.**
- **It could solve the coordination problem,** since debts would be centralised in one agency. It could be set up with proper incentives by giving it an explicit mandate to maximise recoveries within a defined time period.

Issues:-

- **Private asset reconstruction companies have been operating in the country for a while now, but have met with little success in resolving stressed loans.**
- Will not address the **more serious corporate governance issues plaguing public sector banks that led to the NPA problem in the first place.**
- The solution is not without problems since with the bad loans off their books, **banks can get reckless with lending again**

Way forward:-

- Economic survey also suggests that **instead of investing funds and recapitalize the banks year after year, it would be better for the government to focus on recovery.**

Q) Discuss the controversies associated with the proposal of imposition of a sugar cess? Suggest some long term measures to deal with the problems of sugar industry? (250 words)

Financial express

Why this question

The primary purpose of GST is to create one nation, one tax, one market. All forms of cesses, surcharges etc were supposed to be subsumed under it. In this situation, talks of imposition of sugar cess raises several questions which needs to be examined.

Key demand of the question

The question demands us to bring out the various issues – constitutional, from perspective of separation of power, economic etc associated with imposition of sugar cess. Thereafter, it expects us to provide alternatives to resolving the crisis in the sugar sector.

Directive word

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.



Structure of the answer

Introduction – Explain the proposal of introducing sugar cess and mention what cesses are and its status under the GST regime.

Body – Discuss the various issues under heads like constitutional, economic etc. Analyze the case from both for and against perspective. Bring out issues like the basis of cess in GST regime, the authority of GSTN to impose cess etc. Post that, discuss the long term solutions to the crisis in sugar sector.

Conclusion – provide your view and way forward.

Background:-

- The domestic sugar industry with its 530 operational sugar mills that produce 25 million tonnes (MT) of sugar and in the process pays Rs 65,000 crore as sugarcane price to 50 million Indian farmers every year, is not in the pink of health.
- Recently a tax proposal was mooted by the GST Council (Council) proposed the imposition of a sugar cess within the GST regime in light of the present situation.

Controversies associated with imposition of sugar cess are :-

- **Constitutional:-**
 - Cesses imposed by the Centre for 'specific purposes' are not shared with the state governments on account of Article 270.
- **By design**, the sugar cess appears to be a cess with the characteristics of a tax (cess tax). The earmarked purpose is to compensate the farmers who are the beneficiaries, but the bearers of the burden will be the public.
- **In preparation for GST, a number of commodity / industry specific cesses such as sugar cess, tea cess, and jute cess were repealed.** To re-introduce sugar cess is not just going against the grain of the GST law, but could lay a wrong precedence for other sectors to introduce such levies.
- States have a vested interest in securing the interests of the local industry, which could lead to divisive and polarised voting in the Council
- **Legal:-**
 - Powers of the GST Council to impose any special rates, in addition to the GST, are circumscribed in Article 297 A (4) (f): only to the event of a natural calamity or disaster.
 - While the Council has power to advise on 'any other matter' within its own discretion, the residuary power cannot include the already contemplated power to levy additional rates.
- **Dilemma posed by federal structure:-**
 - Owing to a carve out in Article 270, proceeds from the proposed sugar cess would not form part of the divisible pool. If union is to impose such a levy and control the funds it leads to increased dependence of the state governments on the Union Government for the disbursement of funds.
- Sugar cess was collected between 1982 and 2017 and a separate fund called the sugar development fund was created for managing the funds. The accounts of the fund, as available in the public domain, reveal that, as of June 30, 2017, **3,000 crore are lying unutilised in the Consolidated Fund of India.**

Problems of sugar industry:-

- The surplus **production of sugarcane has led to a downward spiral in the price of sugar.** Mill owners are in need of financial assistance, causing them to default on dues to farmers.
- **The glut in production over the last few years have thrown farmers and mill owners into a financial crisis.** Since mills have been unable to pay arrears to farmers, their debt in the 2017-18 season had crossed Rs 23,000 crore across the country, with UP accounting for almost a half.
- **Monoculture of sugarcane.** lack of crop rotation in some areas, leads to depletion of nutrients in soil and adversely affect cane productivity.



- **Post harvest deterioration in cane quality** on account of staling and delayed crushing contributes to low sugar recovery.
- **An irregularity in availability of water is other major issue in cultivation of sugarcane crop.**
 - As many states have sufficient irrigation facility with regular raining season (like South India) while others have poor irrigation facility with even raining season (like Uttar Pradesh).
- **Inadequate availability of quality seed of new sugarcane varieties and poor seed replacement rate** adversely affect the realization of potential cane yield of varieties.
- **Further reduction in yield of sugarcane due to rise in temperature is significant.**
- **The technology used by sugar mills is obsolete** and old which make sugar mills economically unviable and due to this farmers benefit get affected.
- The **small crushing season** last only for 4 to 6 months especially in North India due to lesser availability of water or occurrence of frost, etc.
- **The political ownership or their large share in cooperative sugar mills cause delays in payment to farmers.** The corruption due to political ownership further cause higher price and poor productivity in sugar mills.

Long term solutions required are:-

- The states have to launch their own initiatives to come up with agricultural models **specific to the soil and weather conditions of the region.**
- The sugar industry could be made to **shift from the current control and protection mode to a contract farming mode** under the new Model Contract Farming (Promotion and Facilitation) law.
- Government can also state clearly that **sugar exports will not be banned as part of agri-export policy, thereby giving a stable export regime.**
- If the Centre still needs funds, it may **consider shifting ethanol to a lower rate structure from 18% within the GST as a long-term measure to mitigate pricing issues**
- The **Rangarajan committee**, constituted by the previous UPA government:-
 - Had even laid out a mechanism that could streamline farmers' compensation to provide a minimum guaranteed price within a very short time and a market-linked bonus at a later stage. However, no state government has accepted it in its entirety.
 - suggested making actual payment for cane dues in two steps, where the first would include payment of a floor price (FRP) from mills to farmers and the balance payment would depend on the final sugar price that mills sell at.
- Reduce the dependence of companies on sugar production. Depending on the demand situation, they should be in a position to convert sugarcane into ethanol. But to make it a sustainable and attractive alternative business proposition, **there needs to be predictability in the country's ethanol policies and pricing.**
- **Instead of export subsidy the government should incentivise sugar consuming industries to increase the domestic consumption of sugar.**

Q) Assess the performance of GST regime so far and discuss challenges going forward? (250 words)

Financial express

Why this question

GST on 1st July will complete a year which makes it the opportune time to discuss about the impact that this taxation system had on our economy and on revenue collections. It is also time to reflect on the challenges posed and how to address them.



Key demand of the question

The question expects us to discuss the impact of GST on economy and tax collections, the lessons that we should learn from our experience with GST so far and the ways in which we can address these challenges.

Directive word

Assess – The meaning of this word is similar to evaluate. Here we have to analyze the impact of GST.

Discuss – Here we have to discuss the challenges and way forward.

Structure of the answer

Introduction – Mention that GST is about to complete a year and the time is ripe for assessing impact and addressing challenges.

Body – Bring out the impact GST has had on tax collection, tax buoyancy, business and commerce, economy in general. Mention the challenges that still remain in smooth implementation of GST regime like poor IT infrastructure – issues with GSTIN, many provisions of GST not yet implemented, delayed refunds etc. Mention ways in which we can address these challenges.

Conclusion – Mention that GST is still in its nascent stage. We have seen what happens when GST is not implemented properly such as in Malaysia where it had to be reversed. Mention your view on its performance and way forward

Background :-

- The **Goods and Services Tax (GST)** is a value-added tax levied on most goods and services sold for domestic consumption.

Performance of GST so far :-

- **Economic:-**
 - States are yielding revenue growth of 11.9%, compared with the relevant pre-GST numbers.
 - **Tax buoyancy** (responsiveness of tax growth to nominal GDP growth) is 1.2, which is high by the historical standards for indirect taxes.
 - GST is **boosting revenues of consuming states :-**
 - There has been a desirable and equitable shift in revenues towards the consuming states, and this has happened without threatening the revenues of the producing states reflected in the small compensation requirement.
- **Political:-**
 - Contribution of states for showcasing 'cooperative federalism' in its implementation.
- **IT replaced the inspector:-**
 - In the GST scheme, information technology has replaced the inspector. Everything from return to refund is done through online information technology.
- **Check posts gone, logistics benefit**
 - The check post has become extinct after the arrival of the GST scheme and the movement of goods has become faster, which not only saves time but is also accruing benefits in the area of logistics. GST is probably the biggest tax reform in the world
- **Impact of GST on Manufacturers, Distributor, and Retailers :-**
 - With GST in place, the compliance burden has eased and this sector will grow more strongly.
 - But due to GST business which was not under the tax bracket previously will now have to register. This will lead to lesser tax evasion.



- **E-commerce**
 - The e-commerce sector in India has been growing by leaps and bounds. In many ways, **GST will help the e-com sector's continued growth**
- **Pharma**
 - On the whole, **GST is benefiting the pharma and healthcare industries. It will create a level playing field for generic drug makers, boost medical tourism and simplify the tax structure.**
- **Telecommunications**
 - In the **telecom sector, prices will come down after GST.** Manufacturers will save on costs through efficient management of inventory and by consolidating their warehouses.
 - Handset manufacturers will find it easier to sell their equipment as GST has negated the need to set up state-specific entities, and transfer stocks. They will also save up on logistics costs.
- **Real Estate:-**
 - The sector will see substantial benefits from GST implementation, as it has brought to the industry much-required transparency and accountability.
- **Agriculture**
 - One of the major issues faced by the agricultural sector is the transportation of agri-products across state lines all over India. GST will resolve the issue of transportation.
- **FMCG**
 - The FMCG sector is experiencing significant savings in logistics and distribution costs as the GST has eliminated the need for multiple sales depots.
- **Freelancers**
 - With GST, it will become much easier for freelancers to file their taxes as they can easily do it online. They are taxed as service providers, and the new tax structure has brought about coherence and accountability in this sector.

Challenges ahead :-

- In the Economic Survey, it was argued that **confusion reigns in understanding GST performance because of focusing on one or more of the bewildering sub-categories of the GST (CGST, SGST, IGST, and the cess.) Having four tax rates and three rates of cesses should have been avoided**
- There are **very few states** where there is a significant decline in the post-GST share compared to the pre-GST share.
- There has been considerable **concern with the new tax, both in its structure and operational details, including the ease of paying the tax and filing returns**
- **Trade and industry have been grappling with the problem of payment**, filing the returns and claiming input tax credit, and exporters have been facing liquidity crises.
- It enormously **complicates the technology platform** to ensure input tax credit mechanism
- GST Network, is struggling to **keep pace with the millions of invoices** and returns being filed electronically by businesses across the country.
- For Exporters, because of delayed timelines for filing GST returns, no refunds can be expected before mid-November on input taxes paid in advance and the integrated GST levied on goods they imported.
- 65,000 crore of working capital will get blocked, cramping their ability to ramp up capacity and raw material procurement in time for festive season orders from around the world.
- Several revisions in deadlines, tax and cess rates, rules, clarifications and tweaks later, the GST regime is turning out to be neither simple nor friendly for taxpayers.



Way forward:-

- Problems of transition to a major tax reform are unavoidable and most countries go through this
- It appears desirable to move immediately towards three slabs with the final goal of reducing the slabs to two and to fix the threshold at Rs.50 lakh
- Further simplifying the rate structure, widening the base to include currently exempted sectors, and streamlining procedures for filing and refunds.

Q) The draft on cross-border insolvency, recently released by the government will ensure an effective resolution mechanism in place for cross-border insolvency. Discuss. (250 words)

Indian express

Why this question

Many insolvency and bankruptcy proceedings undergoing in India involve cross-border presence of company's assets. Therefore it is necessary to have a mechanism in place in order to solve cross-border insolvency cases. The issue is related to GS-3 syllabus under the following heading –

Indian Economy and issues relating to planning, mobilization of resources, growth, development and employment.

Key demand of the question.

The question wants us to write in detail about the salient provisions of the draft on cross-border insolvency, recently released by the government and explain how they will lead to an effective resolution mechanism to resolve cross-border insolvency.

Directive word

Discuss- this is an all-encompassing directive which directs us to write at length about the salient provisions of the draft on cross border insolvency and also discuss how it will lead to an effective resolution mechanism to resolve cross-border insolvency.

Structure of the answer

Introduction – *mention that in many of the ongoing cases under the IBC, several companies have assets and operations outside India, for which a legal framework is required to deal the assets overseas.*

Body-

- *Discuss that the existing IBC provides for two Sections –234 and 235 — relating to cross border insolvency but these are not adequate. Mention that under section 235, India may issue a letter of request to a court or an authority competent to deal with such request, of the foreign country.*
- *Discuss in points the salient provisions of the draft and bring out how the draft will place an effective mechanism to deal with cross-border insolvency. E.g the central government after entering into agreement with other countries, may bring overseas asset of a domestic corporate debtor into consideration of insolvency resolution in India, can be extended to cases of personal insolvency resolution as well, in line with UNICTRAL Model Law on Cross-Border Insolvency and thus cooperation can be sought from other countries who have adopted the model law etc.*

Conclusion– *Form a fair and a balanced opinion on the issue, based on your discussion.*

Background:-

- India is looking to introduce a globally accepted and well recognised cross-border insolvency framework, fine tuned to suit the needs of aspirational Indian economy. It has taken initiative for Cross-Border Insolvency within the Insolvency & Bankruptcy Code, 2016 (IBC) to provide a comprehensive legal framework.



Why India needs cross border insolvency:-

- The existing IBC provides for two Sections –234 and 235 relating to cross border insolvency but these are not adequate to effectively deal with default cases of domestic corporate debtor having assets and operations outside India.
- In many of ongoing cases under IBC, several companies have assets and operations outside India, for which legal framework is required to deal assets overseas.
- Existing provisions only allow Central government to enter into agreement with foreign country for enforcing provisions of Code. Second, the government can issue a letter of request to country outside India seeking information.
- The draft norms have now been issued to plug these loopholes and have any effective resolution mechanism in place for cross-border insolvency.
- Although the Insolvency bankruptcy code has resulted in significant improvement in India's insolvency regime, there is a need to include cross-border insolvency in the Code to provide a comprehensive insolvency framework.

How it will ensure an effective resolution mechanism:-

- It would **help banks access overseas assets of a company** undergoing resolution.
- **FDI :-**
 - Once approved, the proposed cross border insolvency framework will lead to more cross-border deals and help in making India an attractive FDI target by reducing the risks associated with insolvency.
 - Furthermore, it will make India an attractive investment destination for foreign creditors given the increased predictability and certainty of the insolvency framework.
 - It would provide **greater efficiency and certainty on cross-border insolvency issues**. The levelling of the playing field is a significant move which would be viewed positively by the global investor community and by multinational corporations.
 - Would certainly help in making India an attractive FDI target by reducing the risks associated with insolvency and hence lead to many cross border deals.
- It is in line with **UNICTRAL Model Law on Cross-Border Insolvency** and thus cooperation can be sought from other countries who have adopted the model law etc.
- Cross border insolvency framework is a positive step and meets one of the main lacunae in the bankruptcy code **which is modern business is transnational and the law should proceed on that basis**.
- Inclusion of cross-border insolvency framework is expected to **further enhance ease of doing business, provide a mechanism of cooperation between India and other countries** in the area of insolvency resolution, and protect creditors in the global scenario.
- **Foreign creditors and Indian creditors will be at par** if the framework on cross-border insolvency gets introduced in India.
- Model law will make it very easy for **Indian MNCs and global MNCs to resolve insolvencies seamlessly across borders**.
- It is also a **big positive for lenders including equity investors** as it sets the right tone to their investment committee that due processes would be followed that are globally acceptable.
- Cross-border deals, both inbound and outbound, would greatly benefit from the reduced risk perception of India as a destination where strong Insolvency law exists. This would encourage **lot many lenders to consider backing M&A transactions involving India**.



Q) On 1st of July, GST will celebrate an year of existence. Critically analyze the performance of GST regime so far? (250 words)

[Financial express](#)

[Financial express](#)

Why this question

GST, the most significant tax reform in India, will complete a year in July. This provides an opportune moment to discuss the impact of the scheme and the way forward.

Key demand of the question

The question expects us to highlight the impact of GST on various sectors, bring out the pros and cons and present our view on how effective GST has been, in terms of the perceived gains that the administrators thought would accrue with the implementation of GST.

Directive word

Critically analyze – When asked to analyze, you have to examine methodically the structure or nature of the topic by separating it into component parts and present them as a whole in a summary. You need to conclude with a fair judgement, after analyzing the nature of each component part and interrelationship between them.

Structure of the answer

Introduction – explain GST and the objectives of implementing it.

Body – Discuss the overall impact of GST on businesses, tax collection, cooperative federalism, mechanisms and provisions of GST which have impacted the tax administration etc. Discuss the pros and cons. Highlight how the situation can be improved.

Conclusion – Being out a fair and balanced conclusion on the impact of GST and what the way forward should be.

Background :-

- The **Goods and Services Tax (GST)** is a value-added tax levied on most goods and services sold for domestic consumption.

Performance of GST so far :-

- **Economic:-**
 - States are yielding revenue growth of 11.9%, compared with the relevant pre-GST numbers.
 - **Tax buoyancy** (responsiveness of tax growth to nominal GDP growth) is 1.2, which is high by the historical standards for indirect taxes.
 - GST is **boosting revenues of consuming states:-**
 - There has been a desirable and equitable shift in revenues towards the consuming states, and this has happened without threatening the revenues of the producing states reflected in the small compensation requirement.
- **Political:-**
 - Contribution of states for showcasing ‘cooperative federalism’ in its implementation.
 - All states and the Centre have worked very closely in ironing out various issues that have cropped up, and most of the decisions taken by the GST Council have been unanimous.
 - Close cooperation between the Centre and states in introducing anti-evasion measures, like the e-way bill, led to a turnaround in collections,
 - Since there was no evidence of a GST-induced inflation spiral, the legislation was used sparingly and price fixation was largely left to the forces of demand and supply, which worked very well in most businesses.



- **IT replaced the inspector:-**
 - In the GST scheme, information technology has replaced the inspector. Everything from return to refund is done through online information technology.
- **Check posts gone, logistics benefit**
 - The check post has become extinct after the arrival of the GST scheme and the movement of goods has become faster, which not only saves time but is also accruing benefits in the area of logistics. GST is probably the biggest tax reform in the world
- **Impact of GST on Manufacturers, Distributor, and Retailers :-**
 - With GST in place, the compliance burden has eased and this sector will grow more strongly.
 - But due to GST business which was not under the tax bracket previously will now have to register. This will lead to lesser tax evasion.
- **E-commerce:-**
 - The e-commerce sector in India has been growing by leaps and bounds. In many ways, **GST will help the e-com sector's continued growth.**
- **Pharma:-**
 - On the whole, **GST is benefiting the pharma and healthcare industries. It will create a level playing field for generic drug makers, boost medical tourism and simplify the tax structure.**
- **Telecommunications:-**
 - In the **telecom sector, prices will come down after GST.** Manufacturers will save on costs through efficient management of inventory and by consolidating their warehouses.
 - Handset manufacturers will find it easier to sell their equipment as GST has negated the need to set up state-specific entities, and transfer stocks. They will also save up on logistics costs.
- **Real Estate:-**
 - The sector will see substantial benefits from GST implementation, as it has brought to the industry much-required transparency and accountability.
- **Agriculture:-**
 - One of the major issues faced by the agricultural sector is the transportation of agri-products across state lines all over India. GST will resolve the issue of transportation.
- **FMCG :-**
 - The FMCG sector is experiencing significant savings in logistics and distribution costs as the GST has eliminated the need for multiple sales depots.
- **Freelancers :-**
 - With GST, it will become much easier for freelancers to file their taxes as they can easily do it online. They are taxed as service providers, and the new tax structure has brought about coherence and accountability in this sector.

Challenges ahead :-

- In the Economic Survey, it was argued that **confusion reigns in understanding GST performance because of focusing on one or more of the bewildering sub-categories** of the GST (CGST, SGST, IGST, and the cess.) **Having four tax rates and three rates of cesses should have been avoided.**
- There are **very few states** where there is a significant decline in the post-GST share compared to the pre-GST share.
- There has been considerable **concern with the new tax, both in its structure and operational details, including the ease of paying the tax and filing returns**



- **Trade and industry have been grappling with the problem of payment**, filing the returns and claiming input tax credit, and exporters have been facing liquidity crises.
- It enormously **complicates the technology platform** to ensure input tax credit mechanism.
- GST Network, is struggling to **keep pace with the millions of invoices** and returns being filed electronically by businesses across the country.
- For Exporters, because of delayed timelines for filing GST returns, no refunds can be expected before mid-November on input taxes paid in advance and the integrated GST levied on goods they imported.
- 65,000 crore of working capital will get blocked, cramping their ability to ramp up capacity and raw material procurement in time for festive season orders from around the world.
- Several revisions in deadlines, tax and cess rates, rules, clarifications and tweaks later, the GST regime is turning out to be neither simple nor friendly for taxpayers.
- The frequent changes in various aspects of GST, coupled with unexpected surges in compliance loads, **led to some difficulties for businesses in grappling with GST during the initial phases.**
- **Reverse charge being made applicable on purchases from unregistered dealers by registered dealers:-**
 - This provisions appears to emanate from the government's desire to cover the entire value-chain in GST and not have any segments that are not covered.
 - Further, the language used in Section 9(3) and 9(4) indicates that the recipient of goods and services is not only required to pay the tax but would also be treated as if he is the person liable for paying the tax" and "all provisions of the CGST Act shall apply accordingly. **This means that the recipient is required to ascertain the classification and rate applicable to the goods supplied as this is normally done by the supplier.**
 - **Another issue that comes up in the context of reverse charge is the ability of the recipient to take credit of the tax paid by him** on behalf of the service provider

Way forward:-

- The pending cases under the earlier tax regime need to be dealt with, and all pending assessments and audits under the old laws need to be completed.
- Problems of transition to a major tax reform are unavoidable and most countries go through this
- It appears desirable to move immediately towards three slabs with the final goal of reducing the slabs to two and to fix the threshold at Rs.50 lakh
- Further simplifying the rate structure, widening the base to include currently exempted sectors, and streamlining procedures for filing and refunds.
- Improving the compliance pattern and making it easy for businesses to file returns is of paramount importance.
- A modular structure of filing returns, where only relevant portions of the return are to be completed by various businesses, would encourage more businesses to comply with GST and file returns in time.
- In addition, staggering the return filing dates for various categories of small and large taxpayers would be beneficial in balancing the load on the IT infrastructure.

Q) E-commerce has opened new vistas of opportunity for women entrepreneurs in India. Comment. Also, discuss how Women Entrepreneurship Platform (WEP) launched by NITI Aayog aims to support women entrepreneurship. (250 words)

[Reference](#)

[Reference](#)

[pib](#)



Why this question

E-commerce is growing at a very fast rate in India and relying on new technologies and increasing social media penetration, it has increased opportunities for women entrepreneurship in India. The NITI Aayog has recently signed statement of intent (Sol) with several financial institutions & social organisations with an aim to increase the number of women entrepreneurs under the WEP. The issue is related to gs-3 syllabus under the following heading

Indian Economy and issues relating to planning, mobilization of resources, growth, development and employment.

Key demand of the question.

The question wants us to express our knowledge and understanding on the rise of e-commerce and its effect on women entrepreneurship. It also wants us to write in detail about the aim and strategy of WEP launched by NITI Aayog.

Directive word

Comment- We have to express our knowledge and understanding of the issue and bring out how e-commerce has helped women entrepreneurs.

Discuss- we have to write in detail about the WEP.

Structure of the answer

Introduction – *Mention that growing adoption of technology, increased social media penetration, growing education and growth of e-commerce has provided an enabling system for growth of women entrepreneurship in India.*

Body–

- *Discuss how e-commerce has helped women entrepreneurs; minimum investment needed, no gender barriers, opening up new markets, marketing and market analysis through social media etc.*
- *Discuss how WEP started and its aim (to substantially increase the number of women entrepreneurs who will create and empower a dynamic New India) and how it wants to achieve those aims (e.g. motivating aspiring entrepreneurs to start their enterprise, providing knowledge and ecosystem support to women entrepreneurs to help them foster entrepreneurship, providing hands-on support to entrepreneurs in setting-up and scaling up businesses, a dedicated and interactive website to act as a dedicated resource and knowledge base, operate within a broader framework of industry collaborations and partnerships, which cut across sectors in the economy etc.)*

Conclusion- *form a fair and a balance conclusion on the above issue.*

Background:-

- The advent of new technologies and ease in communication is opening up new vistas for women in E-commerce market. Increased social media penetration, growing education and growth of e-commerce has provided an enabling system for growth of women entrepreneurship in India.

How E-commerce encouraged women entrepreneurship:-

- **It is helping them to maintain a balance between their career and responsibilities simultaneously.**
 - The idea of “Minimum investment, Maximum profit” in E-commerce business is helping women entrepreneurs to start their businesses while working from the comfort of their homes.
 - Many women entrepreneurs serving service sector also enjoy the flexibility to work from home specifically in the field of – content development, sales, recruitment, lead generation and travel packaging, among others that just require a strong internet connection, a laptop and a mobile phone.
 - In addition, industries like wedding planning, interior designing, digital marketing, etc are also helping women entrepreneurs to work according to their flexibility.



▪ **Seizing new opportunities through technology:-**

- The high penetration of internet and use of social media is also playing an influential role in driving their business by **reducing barriers to work across the boundaries and creating flexibility around their schedule by introducing virtual workplaces and digital lifestyle.**
- With the growing use of social media, women entrepreneurs are finding it easier to identify new business opportunities and finding sales leads online for building a sustainable business. Several women are also taking complete advantage of Social media platforms to boost their sales numbers and build a strong customer base.
- Moreover, it plays a **critical role in removing gender biasness as the online medium places a layer of invisibility on the seller's identity.**
- E-commerce revolution has also brought a great sense of **financial independency along with creative satisfaction for women.**

NITI Aayog initiative and how it supports women entrepreneurship:-

- NITI Aayog launched the Women Entrepreneurship Platform (WEP), on the occasion of International Women's Day
- **Objective**
 - Build vibrant ecosystem for women across country to help realise their entrepreneurial aspirations, scale-up innovative initiatives and chalk-out sustainable, long-term strategies for their businesses.
 - Power vibrant entrepreneurial ecosystem through an enabling network of industry collaborations, partnerships, mentors and peer-to-peer connect.
 - Address bottlenecks faced by both aspiring and established women entrepreneurs by streamlining information across government and private sector schemes and initiatives with informative, interactive website as a dedicated resource and knowledge base.
- **Key Features**
 - WEP aspires to substantially increase number of women entrepreneurs to create and empower dynamic new India by opening up avenues of growth and opportunity for women entrepreneurs. **These aspirations of women entrepreneurs are manifested in three pillars on which WEP is built:**
 - **Ichha Shakti:** Motivating aspiring entrepreneurs to start their enterprise.
 - **Gyaan Shakti:** Providing knowledge and ecosystem support to women entrepreneurs to help them foster entrepreneurship.
 - **Karma Shakti:** Providing hands-on support to entrepreneurs in setting-up and scaling up businesses.
 - The WEP platform will operate within broader framework of industry collaborations and partnerships, which cut across sectors in economy. It will provide unique services such as credit evaluation of women-led startups by CRISIL and potential equity investments through an Rs. 10 crore fund established by DICE Districts.

TOPIC: Effects of liberalization on the economy

Q) The experience of India with FTAs have taught us that we should proceed with extreme caution when it comes to RCEP negotiations. Analyze. (250 words)

[Livemint](#)

[Economic times](#)

Why this question

As RCEP negotiations with China gather pace, doubts over the efficacy of FTAs for India has been pointed out by several analysts. Moreover, in light of the growing trade deficit with China, RCEP negotiations assume much greater significance.



Key demand of the question

- *The question demands the answer to the following points incorporated in your answer*
- *Examine the experience of India with FTAs. Bring out the positive and the negative impacts that FTAs have had on India's trade balance, imports and exports.*
- *Discuss the critical points of contention in RCEP negotiations both region wise and issue wise*
- *Highlight the risks that are there for India in case of a bad decision and thus the need to proceed with caution*
- *Discuss how India should approach the RCEP negotiations*

Directive word

Analyze – When asked to analyze, you have to examine methodically the structure or nature of the topic by separating it into component parts and present them as a whole in a summary.

Structure of the answer

Introduction – *Mention that RCEP negotiations are upcoming which is a regional FTA. India has become a part of many regional and bilateral FTAs which have led to several issues which needs to be discussed before proceeding with RCEP.*

Body

- *Highlight the benefits and losses of so many FTAs. In benefits bring out macro points like greater trade volume, price advantages due to duty waiver etc. Thereafter delve deeper into the impact of FTA on India by analysing the results of ASEAN FTA etc , take points from the economic times article*
- *Thereafter, focus on bringing out the major points of contention in RCEP negotiations. Discuss the major issues and also discuss specific issues wrt certain countries like China*
- *Bring out the risks that a faulty negotiation strategy has for India and this would prove why is it necessary to proceed with caution.*
- *Discuss a way forward for india's negotiation strategy at RCEP*

Conclusion – *Present your view on FTA in general and RCEP in particular and how should India go ahead with them.*

Background:-

- RCEP accounts for 28% of world trade and covers nearly half of the world population. The legally binding RCEP covers a wide range of issues including trade in goods and services, investment, intellectual property rights, competition policy, dispute settlement and economic and technical cooperation

Experience of FTA's for India :-

- **Negatives:-**
 - **Lack of information on FTAs, low margins of preference, delays and administrative costs associated with rules of origin, non-tariff measures, are major reasons for under-utilisation.**
 - When it comes to the **India-ASEAN FTA**, there is a deterioration of the quality of trade. Apart from the surge in total trade deficit due to tariff cuts, sector wise trade flows also paint a grim picture.
 - Sectors where trade deficit has worsened account for approximately 75% of India's exports to ASEAN.
 - India has been faring poorly with its FTA **partners such as South Korea and Japan.**
 - They were negotiated with little foresight and haven't brought in sufficient gains.
 - **The poor utilisation rate of the RTAs has only re-enforced India's belief in the multilateral system led by the WTO**, where rules are less complex. It's the WTO which addresses issues such as anti-dumping and subsidies which are crucial for India.



▪ **Positives:-**

- FTAs are instrumental in creating seamless trade blocs that can aid trade and economic growth.
- It will lead to greater trade volume helping with price advantages due to duty waiver etc.

Why extreme caution is necessary for RCEP negotiations :-

- With a high rate of poverty, a large rural population consisting mainly of small and marginal farmers and landless labourers, an immature industrial sector, a growing but narrow service sector and vulnerable health and education sectors, **India had very rightly maintained a cautious approach in its FTAs on goods, intellectual property rights, and many new issues such as investment, government procurement and competition policy.**
- India's cautious approach faces a major paradigm-shift given the current negotiations in RCEP. It **has the potential to overthrow India's policies of rural development and industrialisation especially 'Make in India'**, and to provide accessible healthcare and medicines to all. It also threatens the policy flexibility and sovereignty to pursue independent economic, social and environmental policies.
- **Trade deficit issue:-**
 - 16-member RCEP free trade agreement (FTA) is mostly held up due to India's reluctance to substantially open up its market to China as **it has an unsustainably high trade deficit of \$63 billion in 2017-18** with China.
 - Country needs to rethink joining the RCEP as it will be "disastrous" to provide more market access to China, which is a key player in the grouping
- Many countries want India to open up its market for 92% of traded goods, **while India is only ready to offer market access up to a maximum of 85% items with deviations for countries** like China, Australia and New Zealand with whom it does not have an FTA.
- **Services:-**
 - India will also seek China's help to carve out a more ambitious deal in services under RCEP to which most member countries have shown strong resistance. India believes an ambitious services deal will help it provide job opportunities in RCEP member countries for its millions of skilled professionals at home.
- **Agriculture and allied products:-**
 - The plantation sector is already reeling from the impact of the India-ASEAN FTA even with relatively high protection of agriculture and a tariff-coverage of 73-80 per cent.
 - If tariff cuts cover 92-80 per cent of products, the impact will be huge.
 - On the other hand, New Zealand's export-oriented dairy products will decimate India's growing dairy sector, which is still largely small-scale.
- **Industrial sector :-**
 - If India offers to reduce/eliminate import tariffs on a larger number of industrial products than already committed to ASEAN, Japan and South Korea, its industrial sector could be under stress.
 - Further, India is being asked to eliminate export restrictions on minerals and raw material by Japan and South Korea; this may **threaten domestic raw material availability for industrialisation and encourage over-mining.**
- **E-commerce:-**
 - E-commerce commitments, if any, will allow companies such as Alibaba from China to displace Indian manufacturing especially in the SME segment.
- **Medicine:-**
 - Agreeing to data exclusivity, extending patent terms and unduly strong enforcement measures will weaken the entire generic medicine sector and take away several health safeguards in India's Patent Act, notably section 3(d). This will make medicines inaccessible not only for Indian patients but for those in the entire developing world.



- **Intellectual property:-**
 - **IP chapter in RCEP is at risk of including provisions far stricter than those mandated by the World Trade Organisation (WTO) and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS).**

Way forward for India:-

- Before getting into any multilateral trade deal, **India should review its existing FTAs in terms of benefits to various stakeholders like industry and consumers, trade complementarities and changing trade patterns in the past decade.** Negotiating bilateral FTAs with countries where trade complementarities and margin of preference is high may benefit India in the long run.
- Also, higher compliance costs nullify the benefits of margin of preference. **Thus reducing compliance cost and administrative delays is extremely critical to increase utilisation rate of FTAs.**
- **Proper safety and quality standards should be set to avoid dumping of lower quality hazardous goods into the Indian market.**
- **Circumvention of rules of origin should be strictly dealt with by the authorities.** Well-balanced FTA deals addressing the concerns of all the stakeholders is the need of the hour
- Developing countries like India which have taken the leadership in instituting and using balanced intellectual property protection for pharmaceuticals should not only proudly protect their laws in the RCEP negotiations, **they should also encourage other countries to adopt and use similar measures that ensure generic competition.**
- Before going ahead with any of the mega trade deals, India needs to aggressively undertake a few of the pending reforms. These include domestic as well as trade reforms like changes in land and labour laws especially in sectors like textiles and reduction in subsidies are crucial as RCEP would bring in investment in several labour intensive sectors including textile.

Q) What do you understand by Personally Identifiable Information as per GDPR of EU. How do you think businesses will be impacted by the new regulations. Comment. (250 words)

[Hindustantimes](#)

[Reference](#)

Why this question

With increasing digitization and growing online presence, coupled with the unfolding of various scandals like Cambridge Analytica, interference in US elections, the issue of privacy has taken the front seat. In this regard, the European Union has taken a much deserved and desired initiative in the form of GDPR. However, there are certain issues involved. Question is related to GS 2 syllabus under the following heading-

Effect of policies and politics of developed and developing countries on India's interests, Indian diaspora.

and to GS 3 syllabus under the following heading-

Awareness in the fields of IT, Space, Computers, robotics, nanotechnology, biotechnology and issues relating to intellectual property rights.

Key demand of the question

The question wants us to describe the meaning and scope of the term, Personally Identifiable Information, as per the recently implemented GDPR of EU. It also wants us to express our opinion on how businesses will be affected by GDPR.

Directive word

Comment- the second part of the question directs us to form of personal opinion on how businesses will be affected by GDPR. We have to substantiate our opinion with proper related arguments/ facts/ examples etc.



Structure of the answer

Introduction- *briefly define the term personally identifiable information. Also mention what sort of information qualifies as personally identifiable information, as per GDPR of EU.*

Body-

- *Discuss the positive impact of GDPR on businesses. E.g Improved consumer confidence, Better data security, Reduced maintenance costs, Better alignment with evolving technology, Greater decision-making etc.*
- *Discuss the negative impact of GDPR on businesses. E.g similar but not same legislation may be made in other countries, creating confusion for businesses; compiles cost may be high especially for small and medium players, the business may not be enough prepared to follow the legislation.*

Conclusion- *form a concise, fair and a balanced opinion on the issue.*

Personally identifiable information:-

- GDPR largely focuses on protecting personally identifiable information (PII). This includes basic contact information, web data, health and biometric data, and other social data which can be used to identify any specific individual.

New regulations:-

- GDPR regulations aim to drastically increase the transparency in the data processing methods of any worldwide business that handles the data of EU citizens. As 'data subjects', EU citizens will be handed greater control of their own data, deciding who gets to use it and how those businesses can use it.
- Its aim is to protect the personal data and privacy of all citizens in the EU, and limit its export. GDPR could be the first law to hold companies of any size, accountable for the data that they collect, store, analyse, and use.
- GDPR prescribes **how companies that deal with data of EU citizens could handle and store it with third parties.**
- The Regulation confers protection to data subject as a matter of right.
- The **three objectives mentioned in the GDPR are:-**
 - Protection of natural persons when their data is processed
 - Protection of their fundamental rights and freedoms with respect to data protection
 - Freedom of movement of personal data for processing purpose.

How will GDPR affect businesses adversely?

- GDPR requires all data handling entities to obtain explicit, oral, written and specific consent for every instance of data captured. The consent must be taken with an affirmative act. **During data collection, the companies are expected to explain how and why the data is obtained.** They must also reobtain consent, if the methods or the usage of data changes. **If the companies do not obtain consent or if it is not verifiable, then they are at risk of non-compliance.**
- **As per Article 13 of the regulation, these companies are also required to provide information to the relevant customers about the data controller, data processing involved, length of retention of data, protection measures, and ways to exercise the customer rights that GDPR provides.**

The New Regulation



1. GDPR was approved by the EU Parliament on April 14, 2016. It came into effect on May 25, 2018.

2. It impacts organisations located within EU and those outside that process or hold personal data of EU residents

3. Organisations will be fined 4 percent of global turnover or €20 million for non-compliance.

4. Personal data includes name, ID number, location

data or online identifiers.

5. People can ask data controllers if their personal data is being processed, where, and for what purpose.

6. People have the right to be forgotten, and can ask the data controller to erase personal data, stop dissemination of the data, and have third parties stop processing the data

7. Conditions for consent have been strengthened



- To adhere to Article 22, the companies must restrict the use of intelligent algorithms in decision making and profiling of individuals. The algorithms used for analytics may have a significant effect on data capture.
- **Heavy penalties:-**
 - If any of these specifications are not met, then the company can face penalties as high as €20 million or 4 per cent of their annual turnover, whichever amounts to a higher value
- **Compliance process is expensive**, as companies will need to spend heavily on upgrading technology, introducing data encryption modules, and incurring legal and compliance costs.
- Smaller units could face a challenge in terms of increased costs.
- **The “right to erasure” will allow data subjects to request that their own personal data is permanently deleted by organisations that they do not wish to be in possession of it.** Businesses that fail to comply with the requests to be removed will face immense financial consequences, as will businesses that experience leaks and data breaches.
- GDPR won't just affect companies based in the EU, despite the fact it concerns the data of EU citizens. Any business handling the data of EU citizens whether customers, employees or other stakeholders must comply, no matter where the business is located.
- There is **no single authority to certify the level of compliance**. This leaves a **lot of subjectivity** and hence can cause confusion amongst smaller companies that may not have easy access to the right legal entities.
- 65% of organizations are still not confident that their GDPR data will stay within the EU.
- Recently UK government report found that **less than half of businesses are aware of the upcoming GDPR laws**.
- Confusion still reigns over the GDPR's right to be forgotten.
- **Indian businesses:-**
 - While most companies are still in the initial phase to set up compliance frameworks, **it is worrying to see that a majority are not really concerned about the law**.
 - Europe is an important market for start-ups operating in the business-to-business (B2B) segment and mobile gaming. **Hefty fines and strict regulations could hinder a firm's operations or lead to a complete shutdown, especially of start-ups**.
 - GDPR is enforceable even if companies do not have an office in the EU or do not operate in the EU, but handle private data of EU citizens.
 - Due to the differences in regulatory practices, the legal parameters have been ambiguous which make compliance more complex and difficult to achieve. The Indian government has concerns with regard to the following issues:
 - The Indian IT/BPO industry requires an increased free flow of data to be transferred from the EU
 - The regulation will limit EU companies outsourcing options which will result in **obvious opportunity losses for businesses in India**
 - **India's relatively weak data protection laws make India less competitive** as outsourcing markets in this space when other economies are updating their regulatory practices to ensure seamless inter-state operability
 - Largely inflexible, **GDPR reduces the extent to which businesses can assess risks** and make decisions when it comes to transferring data outside the EU
 - The regulations target service providers **directly who will have to face high costs such as investing “cyber insurance”** whilst adopting new technology. Non-compliance will result in severe penalties.



There are some positives too for the companies:-

- **Improved consumer confidence**
 - GDPR compliance will prove to customers that your organisation is a good custodian of data. This new legislation mandates that each organisation have a data protection officer (DPO), along with regular audits of data processing activities.
 - The GDPR's proposed security practices will bolster your brand's reputation, showing customers that you have a robust data governance system in place.
- **Having a GDPR-compliant framework in place will extend your cyber security practices.**
 - The GDPR mandates using **privileged and identity access management** to give only a few professionals access to critical data in your organisation, thereby ensuring that data does not fall into the wrong hands.
- **Reduced maintenance costs**
 - Complying with the GDPR can help companies cut costs by prompting them to retire any data inventory software and legacy applications that are no longer relevant to business.
 - By following the GDPR's mandate to keep your data inventory up-to-date, companies can significantly reduce the cost of storing data by consolidating information that is present in silos or stored in inconsistent formats.
 - **Another cost benefit of the GDPR is that your organisation will be able to more effectively engage with customers.** The communication will be more personalised because of the granularity of the information collected, thus saving you the sunk cost of pursuing uninterested consumers
- **Better alignment with evolving technology:-**
 - As an extension of GDPR compliance, companies will have to move towards improving its network, endpoint and application security.
 - Migrating towards the latest technologies like virtualisation, cloud computing, BYOD and The Internet of Things (IoT) can **give the businesses a way to more effectively manage the growing demand for data and also allows them to offer end users augmented products, services and processes.**
- With **third-party management tools**, businesses can constantly monitor its new environment for any data breach
- Organisation's data will become more consolidated, ensuring that its data is easier to use, and it has a greater understanding of its underlying value.
- By using customer information effectively, **organisation will be able to make better decisions and consequently get a better return on its investments.**
- **Opportunities for Indian businesses:-**
 - Indian companies that have operations in EU are looking to revise contracts with their vendors and customers to include GDPR.
 - By drawing upon the regulatory practices of GDPR, **India could develop an over-arching data protection regime that would extend to all government and business practices as this will only boost growth in the long run.**
 - GDPR is an excellent opportunity for India to update its regulatory practices and effectively implement the fundamental right to privacy. The IT/BPO sector should use this as a stepping stone to move up the value chain by strengthening its automation portfolio and make the industry more competitive in the global market.

Way forward:-

- India could draw on an over-arching data protection regime by building on GDPR. GDPR will strengthen data protection measures of enterprises and empower them and their customers, if followed in the right word and spirit.



- A **risk-based approach to data privacy** can significantly reduce the potential of non-compliance violations or a breach.
- Adoption of smart cost-efficient ways to address cyber security
- **Professional training for employees** to acquire specific skill sets to develop a stronger data protection regime

Q) “Rules based trading system” is the ultimate casualty of the ongoing trade wars between some of the major economies of the world. Discuss. (250 words)

[The hindu](#)

Why this question

One of the biggest news item of the past few days has been the ongoing trade wars with tariffs and counter tariffs being imposed by several major economies including India. Discussing what it signifies and the impact of it is critical.

Key demand of the question

The question mentions that rules based trading system is the casualty. First we have to explain what means. Thereafter, we have to explain how trade wars is impacting rules based trading system. Also mention the counter view that these tariffs reflect a lack of faith in trading norms and are set to escalate. Present your view in conclusion.

Directive word

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.

Structure of the answer

Introduction – *Bring out why this topic is in news.*

Body – *Explain what rules based trading system means. Highlight how creating a rules based trading system is the chief objective of WTO and, it being the casualty means the lack of faith in WTO and its laws. Post that, discuss why the tariff war is harmful as to ensure free and fair trade it is necessary to abide by the rules of international trade. Highlight how the trade rules are being violated by the tariff war. As an alternate view point, discuss how the present tariff war could be good as trade protectionism is the need of the hour, also that there should be quid pro quo in trade concessions as well as tariff wars.*

Conclusion – *Discuss the way forward and how India should respond.*

Background:-

- Global trade war is becoming a reality as major economies continue to impose tariffs on each other. India is the latest to join the the risk of tit-for-tat battle by slapping tariffs as high as 50% on a list of 30 goods imported from the U.S. The volatility in the world economic system suggests investors may be beginning to take threats of a trade war more seriously.

Rules based trading system :-

- The rules-based multilateral trade and financial system created at Bretton Woods in 1944 has been crumbling over the past decade. The WTO trading system to reduce trade barriers on a reciprocal, most-favored-nation basis has been replaced by a spreading network of bilateral and regional preferential trade agreements.
- The rules-based multilateral trading system has fuelled seven decades of unprecedented job creation and poverty alleviation.
- This system has worked so well for so long because the WTO and its biggest champions, such as the U.S., made three interrelated attributes integral to their trade policies. That is, its members:
 - Reduced uncertainty by creating predictable trade policies



- Created an environment that facilitates decision-making particularly in the long term by consumers and producers
- Placed credible and legal directives that are clearly understood by allies and by those who are not.

How is it affected by trade war :-

- Trade war will gravely undermine the rules-based multilateral system that has underpinned global prosperity since the end of World War II. **Countries around the world, big and small, will be hurt.**
- **Trade disputes should be resolved within the WTO framework.** As economists have pointed out, when assessing economic relationships, what matters is not a country's bilateral trade balance with a specific trading partner but its **overall trade balance with the rest of the world.**
- As the United States accuses China of predatory trading practices while doling out unilateral punishment, the **trade organization tasked with preserving the peace appears marginalized.**
- Those protectionist measures are likely to **move the globe further away from an open, fair and rules-based trade system**, with adverse effects for both the U.S. economy and for trading partners.
- IMF said the tariffs imposed or proposed by the Trump administration also risk catalyzing a cycle of retaliatory responses from others, creating **important uncertainties that are likely to discourage investment at home and abroad.**
- **Threatens WTO:-**
 - WTO is already under strain.
 - The collapse of the Doha round of trade talks in 2015, after many fruitless years, put needed reforms on hold indefinitely.
 - Disputes that might have been swept into a new trade round have fallen to the WTO's dispute-resolution machinery, which is too slow and too frail to carry the burden.
 - The WTO has not kept pace with economic change.
- As **America is looking to pursue a mercantilist trade policy in defiance of the global trading system, other countries are bound to follow.** That might not lead to an immediate collapse of the WTO, but it would gradually erode one of the foundations of the globalised economy.
- The vast improvement in living standards after the second world war went hand in hand with a rapid expansion in world trade over eight trade rounds, each of which lowered barriers. Imports are in fact welcome, because they benefit consumers and spur producers to specialise in what they do best. **This would also be affected.**
- Without the WTO, cross-border trade would continue it is unstoppable but the lack of norms and procedures would leave disputes to escalate. **The fewer the rules, the more scope for mercantilist mischief and backsliding.** Trade policy could be captured by special interests. Military power would hold greater sway in trade disputes than economic fair play. Transnational investment could drain away.
- **US-China:**
 - As many as 70,000 US jobs could be lost as a result of the steel and aluminium tariffs, while as much as 0.3% of US and Chinese GDP could be lost as a result of greater trade barriers between the two countries.

Way forward:-

- Best way to help the WTO would be for its other members to co-ordinate any action
- Free-traders need to recognise that the WTO can help keep markets open in the face of protectionist lobbying, at home and abroad. It is vital they make the intellectual case for rules-based trade.



TOPIC : Indian Agriculture; issues; Technology missions; economics of animal-rearing.

Q) What is Zero Budget Natural Farming? Considering India's food needs, examine the impact of its implementation at a national level? (250 words)

The hindu

Why this question

In the past two years, questions on agricultural techniques have been asked. This technique being used in Andhra Pradesh is significant because it is green, sustainable and can help improve agriculture in other parts of the country where the soil is ravaged by chemicals.

Key demand of the question

The question is quite straightforward in its demand. It expects us to explain what ZBNF is and how prudent would it be to implement this at a national level in light of the food security requirements of the country.

Directive word

Examine – When you are asked to examine, you have to probe deeper into the topic, get into details, and find out the causes or implications if any .

Structure of the answer

Introduction – highlight the achievements of Andhra Pradesh government in ZBNF and mention that the idea has potential.

Body – Explain ZBNF. Highlight how it has been implemented in Andhra Pradesh. Examine the potential of this technique if implemented on a nation wide scale, especially in light of productivity. Examine what lessons can be learnt from the Andhra Pradesh experiment.

Conclusion – Give your view on how important ZBNF can be for Indian agriculture.

Background :-

- Resilient food systems are the need of the day given the variability of the monsoons due to global warming and declining groundwater in large parts of India. The drought-prone Rayalaseema region (Andhra Pradesh) is reportedly seeing promising changes already in farms with the ZBNF.
- To feed the global population of 9.6 billion by 2050, as projected by a United Nations report, scaling up food production is important. But ensuring food security, producing more with less resources and building the resilience of smallholder farmers are also important in creating a food-secure future.

Zero budget natural farming :-

- 'Zero Budget' means without using any credit, and without spending any money on purchased inputs. 'Natural farming' means farming *with*
- It is considered 'zero budget' because the costs of the main crop are offset by the income that farmers earn from intercrops during the agricultural season

The four-wheels of zero budget natural farming

- Water vapour condensation for better soil moisture
- Seed treatment with cow dung and urine based formulations
- Mulching
- Ensure soil fertility through cow dung and cow urine based concoctions

Implementation of ZBNF:-

- Considering its impressive scale, an effective shift to a 100% natural farming state with 8 million hectares free of chemical contamination will achieve transformative impacts in India.



- With successful pilot programmes that were initiated in 2015 and partners who brought experience in different aspects needed to carry out such a transformation, Andhra Pradesh has become the first State to implement a ZBNF policy.
 - The Government of Andhra Pradesh has launched a scale-out plan to transition 6 million farms/farmers to 100% chemical-free agriculture by 2024. This is an unprecedented transformation towards sustainable agriculture at such a massive scale.
 - **Besides reduced input cost, farmers practising ZBNF gets higher yields.** In Anantapuram district, there has been a 136 per cent higher yield in groundnuts under natural farming.
- The scale-out of ZBNF will **promote regenerative agriculture, improve soil biodiversity and productivity, and ensure decent livelihoods to smallholder farmers**, who grow so much of the food people consume but receive so little reward for their labour
- **Higher yield:-**
 - **Besides reduced input cost, farmers practising ZBNF gets higher yields.**
 - In AP, Yields of five crops (paddy, groundnut, black gram, maize and chillies) have increased by 8-32 per cent for ZBNF farmers.
 - Farmers are able to get five quintals of red gram under ZBNF compared to three quintals under non-ZBNF.
 - Farmers use bio fertilizers and that make the soil fertile, thus giving higher yields.
 - **It has the ability to solve the food and farm crisis in the country** by cutting the cost of production and doubling productivity and production
 - **In ZBNF, yields of various cash and food crops have been found to be significantly higher when compared with chemical farming.** For example, yields from ZBNF plots in the (kharif) 2017 pilot phase were found on average to be 11% higher for cotton than in non-ZBNF plots. The yield for Guli ragi (ZBNF) was 40% higher than non-ZBNF.
- **Low input cost:-**
 - Agriculture in its prevailing form requires farmers to rely **heavily on inorganic external chemical inputs such as fertilisers and pesticides. Zero budget' farming promises to end a reliance on loans and drastically cut production costs, ending the debt cycle for desperate farmers.**
- Tenant farmers and day labourers are also being trained, to ensure that through the ZBNF, livelihoods for the rural poor will be enhanced.
- **Net income raised:-**
 - There will be increase in net income for farmers and **will improve the cash flow of poor and vulnerable farmers, and may enhance their ability to deal with economic shock**
 - Crop cutting experiments from 2016 and 2017 indicate that ZBNF farmers in AP earn better net incomes and can raise their disposable incomes. Farmers vulnerable to economic shocks have an important safety net against short-term shocks.
- **Food and nutritional security:-**
 - As a result of increased crop yields, **ZBNF farmers may be able to improve food and nutritional security for their families.**
 - The practice of intercropping growing multiple crops in proximity to each other is encouraged under ZBNF as it ensures vulnerable communities access to a suite of nutritional sources and income generating crops throughout the year
- In the long-run, due to the use of local inputs, the project is likely to contribute to **maintaining the genetic diversity of seeds and crops.**



▪ **Environmental benefits:-**

- The planting of multiple crops and border crops on the same field has provided varied income and nutrient sources. As a result of these changes, there is reduced use of water and electricity, improved health of farmers, flourishing of local ecosystems and biodiversity and no toxic chemical residues in the environment.
- Programme can have a positive effect on many of the sustainable development goals through improvements in soil, biodiversity, livelihoods, water, reduction in chemicals, climate resilience, health, women's empowerment and nutrition.
- **Climate change:-**
 - Model ZBNF farms were able to withstand drought and flooding, which are big concerns with regard to climate change.
- In addition, it will provide a blueprint for an inclusive agricultural model, which takes into account diversity of people along with agro-climatic conditions and can be adapted to varying global contexts to reduce vulnerabilities to climate change.
- Moreover, as 14 out of the 17 Sustainable Development Goals are dependent on the status of natural resources, the health of communities, access to secure nutrition, and empowerment of women, ZBNF constitutes an effective cross-sectoral strategy for achieving SDGs targets.
- It is free from health hazards, as no chemical or organic materials are used for farming
- Prevailing agricultural practices such as mono-cropping decrease soil moisture content, causing tremendous stress on water resources. **Zero budget natural farming requires only 10 per cent water and 10 per cent electricity than what is required under chemical and organic farming.**
- It utilises only natural resources as inputs. It also **increases the fertility of the soil.**
- Fertilisers and pesticides have been shown to have adverse impacts on farmers as well as consumers. **Farmers are exposed to contaminants when applying chemical inputs to their crops. By replacing such external inputs with locally made natural concoctions, inoculums, and decoctions, the project could help in reducing the incidence of non-communicable diseases**
- ZBNF can **help prevent over-extraction of groundwater**, enable aquifer recharge, and eventually contribute to increasing water table levels.
- **ZBNF might help farmers build resilience against extreme climate events by improving the fertility and strength of the soil.**
- By reducing the need for irrigation and eliminating external chemical inputs, **ZBNF could reduce the material footprint per capita and material footprint per unit of value added in agriculture.**
- Wide-scale adoption of ZBNF would help reduce the release of harmful chemicals to the air, water and soil.
- **Zero budget natural farming eliminates chemical fertilisers and pesticides, and would help reduce ocean acidification and marine pollution from land-based activities.** It might help to reduce the leaching of nitrogen and phosphorous from the soil into groundwater or surface water, and eventually into rivers and oceans.
- By restoring the quality of soil and water-related ecosystems, **it decouples agricultural productivity and growth from ecosystem degradation and biodiversity loss.** This decoupling of growth and resource-use provides a sustainable livelihood to farmers and allied value chain actors
- Globally, as few as 30 crops constitute 90 per cent of the calorie intake of people. **ZBNF may improve the potential of crops to adapt to and be produced for evolving climatic conditions.**

Lessons to be learnt:-

- Farmer's collectives such as Farmer Producer Organisations need to be established and these would be critical to sustaining the programme.
- **Policy support needed in the following areas:**
 - There are no other official policies to promote ZBNF.



- A particular challenge is marketing. Many farmers sell their natural produce as if were chemically grown, to private traders or at government wholesale yards, with no price differential. Other farmers rely on their own local marketing networks, such as to some organic shops and individual customers, **but policy support in this area is crucial.**
- The agriculture ministry plans to offer cash incentives to farmers who take up 'yogik' farming, 'gou mata kheti' and 'rishi krishi' is right step in promoting Zero budget natural farming in India.

Q) There is an urgent need to evolve a multi-pronged strategy to make agriculture viable, profitable and sustainable. Comment. (250 words)

[Pib](#)

Why this question

Agriculture is the main occupation of almost half of the Indian population and the sector is today at crossroads facing various challenges. Although it is a general question, it will help you in framing answers for other questions and also for your essay. The issue is related to GS- 3 syllabus under the following heading –

Indian Economy and issues relating to planning, mobilization of resources, growth, development and employment.

Major crops cropping patterns in various parts of the country, different types of irrigation and irrigation systems storage, transport and marketing of agricultural produce and issues and related constraints; e-technology in the aid of farmers etc....

Key demand of the question.

The question wants us to express our understanding and knowledge of the issue. We have to bring out the problems of Indian agriculture in relation to viability, profitability and sustainability and how they could be solved.

Directive word

Comment- We have to present our knowledge and understanding of the issue and present our opinion on the causes of these problems and how they should be handled.

Structure of the answer

Introduction – *Mention that agriculture contributes just about 16% to India's GDP but employs about half of its population etc.*

Body–

- *Discuss in detail the problems of viability and profitability in agriculture, and also the issue of sustainability. Discuss these problems vis a vis their underlying factors e.g shrinking land-holdings and farm sizes, increasing competition internationally, high prices of inputs, entry of multinational corporations, climate change, land degradation, problem of plenty followed by period of scarcity etc.*
- *Discuss what should be done in this regard- e.g Irrigation, Infrastructure, Investment and Insurance sectors – need to be strengthened for an integrated development of farm sector, training of latest know-how and trained in the do-how in order to improve farm productivity; diversification of crops, efficient distribution of food grains, better weather information and advisory services etc.*

Conclusion– *based on your above discussion, form a fair, balanced and a concise opinion on the given issue.*



Background:-

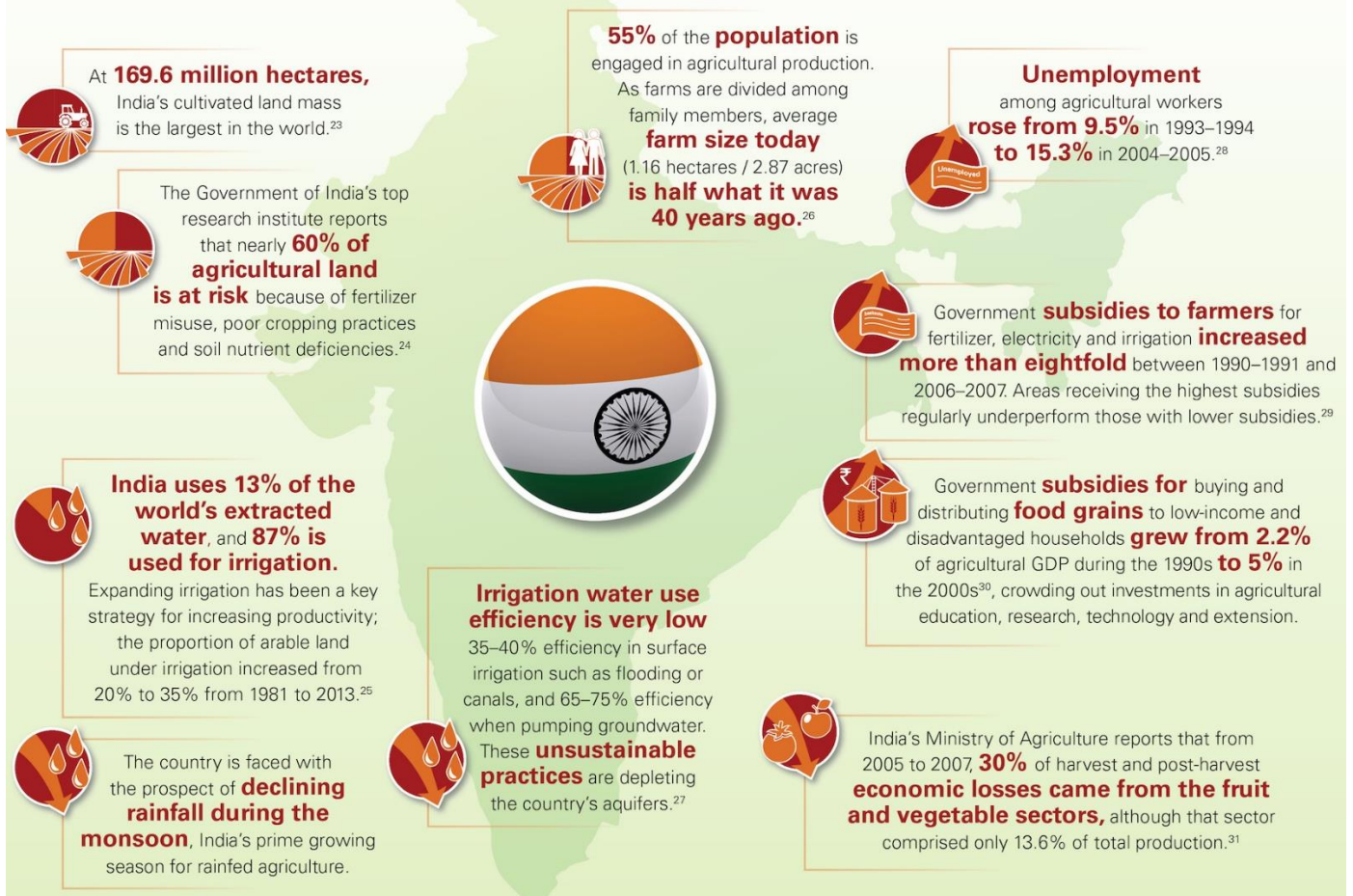
- Although agriculture contributes only around 17% to the country's GDP, nearly half of India's labour force (47%) works in the agrarian sector. With a predominantly rural backbone of the agrarian economy, efforts to improve agricultural labour productivity are needed to raise the living conditions of the majority of the population.

Issues plaguing Indian agriculture:-

- **Farm incomes are unattractive for a variety of reasons:-**
 - The overriding objective of price stability, over time, has tilted farm policy in favour of the consumer, the numerically larger vote bank.
 - Trade and price controls are highly restrictive, and mostly anti-farmer.
 - Protection afforded to the inefficient fertilizer industry ensures that input costs are high.
 - The farmer is forced to sell in the domestic market where prices tend to be lower than global agricultural prices.
 - In the absence of state intervention, prices soar in bad weather years and plunge in good weather years, hurting consumers and farmers.
- **Shrinking land-holdings and farm sizes**, increasing competition internationally, entry of multinational corporations, climate change, land degradation etc are other issues.
- **Lack of funding:-**
 - Despite efforts by the government to improve labour productivity, as per 2014-15 **levels the total amount spent on AgRE&XT is only 0.7% of the GDP derived from agriculture (GDPA)**. This is against the minimum level of 2% as proposed by the World Bank.
 - Eastern states, which are also some of the poorest in the country, spend the least on Agricultural research.
- **Inefficient use:**
 - Of the total amount devoted to Agricultural research, about 70% is utilised for crop husbandry purposes, and only 10% is used for animal husbandry and dairy development. This is despite the growing importance of animal husbandry and dairy to the Indian masses.
- **No communication:-**
 - AgRE &XT sector is plagued by **disparate and disjointed entities and players** (NGOs, public and private enterprises, and institutional bodies), without any channel of communication or synergy between them.
- **Lack of awareness leading to:-**
 - In remote and disadvantaged areas, farmers are rarely contacted by extension agents
 - Several farmers have committed suicide especially in the states of Andhra Pradesh and Maharashtra because of indebtedness and repeated crop failures.
- **Though contract farming** performed by agri-business companies do provide some kind of integrated support, they don't focus on farmer organizational development.
- **ICAR initiatives failure:-**
 - Though ICAR's extension initiatives have been important to transformations in Indian agriculture, **their capacity and reach has always been limited compared to those of first-line extension systems run by State-level departments of agriculture**.
 - Further, since agriculture is a State subject, the mode of organisation and operation of public extension systems vary widely across States.



INDIA'S AGRICULTURE SECTOR: PRODUCTIVITY CHALLENGES



Way forward:-

- **India should have to develop a Human Resource Management Plan at the state level** to figure out capacity gaps, bringing new expertise and enhancing capacities of existing human resources.
- Extension still operates in the Research-Extension-Farmer paradigm that restricts its linkages to only research and farmers. **Extension needs to embrace systems frameworks such as innovation systems framework, which accommodates more number of actors, their interactions, role of institutions and learning to reinvent its future.**
- Effectively capitalising the global competitive advantage, **Indian agricultural institutes** have to work out policy with regards to technology, more market access opportunities, and more transparency.
- Foremost requirement is investment in activities which create productive assets. **The agriculture sector needs huge investment to transform and become more attractive and remunerative.**
- There are three possible options to supplement government investment:
 - Converge various region-wise government schemes into one umbrella programme. This will check duplication of efforts and reduce administrative costs.
 - More incentives may be given to corporate social responsibility (CSR) initiatives for agricultural development schemes.
 - Pilot public-private partnerships (PPPs) in developing agri-infrastructure.
- **Role of start-ups offers huge potential in the agriculture sector that is yet to be harnessed.** There are opportunities for start-ups for agri-packers and movers, door delivery of inputs, services and agro-advisory. A small farmers agribusiness consortia (SFAC) can take the lead in developing appropriate institutional arrangements to attract agribusiness start-ups for such initiatives, which will help smallholders to take advantage of government programmes.
- The holistic plan should encompass technology, risk, institutions, policy and skills



- Technology incubation: outcome-based technology policy encouraging research, innovation and incubation
- Risk institutions and financing: Banks and financial institutions to help promote technology infusion, insurance and mechanization
- Institutions of governance: Promote farmer-producer organizations to be agri micro, small and medium enterprises
- Policy for farming: Focus on improving human and farm productivity
- Skilling: Agricultural technical training institutes
- **Pradhan Mantri Kisan Bima Yojana** and other schemes must be followed up with steps in the national budget. This will bring a new focus to agriculture.
- Irrigation, Infrastructure, Investment and Insurance sectors need to be strengthened for an integrated development of farm sector
- Diversification of crops, efficient distribution of food grains, better weather information and advisory services etc are also needed.

Q) Every year we see that Indian farmers suffer both during surplus production and deficit production. Examine the reasons why and evaluate whether increasing MSP for crops would address the issue? (250 words)

The hindu

Why this question

The article discusses a significant problem being faced by the Indian farmers – low prices for their farm produce both during deficit and surplus production. The inadequacy of the MSP regime is evident whose purpose is to protect farmers against this very risk. Looking at ways to ensure that farmers get the right price and inflation in check is the focus here.

Key demand of the question

The question expects us to bring out the reasons behind low farmer income irrespective of production. Post explaining the fundamental issues at work here, we need to evaluate whether increasing MSP would help solve farmers woes.

Directive word

Examine – When you are asked to examine, you have to probe deeper into the topic, get into details, and find out the causes or implications if any .

Evaluate – When you are asked to evaluate, you have to pass a sound judgement about the truth of the given statement in the question or the topic based on evidences. You have to appraise the worth of the statement in question. There is scope for forming a personal opinion here.

Structure of the answer

Introduction – Highlight the objective of doubling farmer's income by 2022 and the significant challenge posed by the problem highlighted in the question.

Body

- *Highlight some of the incidents such as the glut in sugar prices , the rise of farmers protests such as in Maharashtra etc which proves that the farmer is suffering from a double whammy of climate change and low price for their produce.*
- *Examine the reasons behind it – low penetration of procurement agencies in several pockets of India and for , reactive import export policy for agricultural goods, lack of agricultural infrastructure etc*



- *Discuss whether increasing MSP beyond current level would help address the issue of low prices being fetched by farmers.*

Conclusion – *Emphasize on the severity of the issue and discuss way forward.*

Background:-

- Last year, around 184 farmer groups came together from Tamil Nadu, Maharashtra, Madhya Pradesh, Uttar Pradesh, Punjab and Telangana to take part in a ‘protest walk’, demanding higher prices for agricultural produce. The protest once again highlighted the plight of farmers and the extent of agrarian distress.
- Farmers protests have become a common phenomenon hence necessary actions are required.

Why do farmers suffer:-

- Good rains, excessive sowing and the bumper harvest last year produced gluts in the market that sent the prices of many crops, and therefore farm incomes, crashing.
- None of the economic tools available for protecting farm incomes the price support scheme, the price stabilisation fund and the market intervention scheme was employed to the best advantage.
- Although MSPs are announced for more than 20 crops, noteworthy procurement is conducted for three: paddy, wheat and sugarcane
- Procurement frequently takes places at prices below the MSP, as is happening this year, according to reports. Finally, small and vulnerable farmers usually do not get paid MSPs at all, as they sell their produce to aggregators, not directly in mandis.
- **Gluts, depressed market prices and mounting farmer losses are a direct consequence of the malfunction in agri-pricing policies.**
- Despite a bumper crop last year, farmers are not satisfied with the procurement price. They are, therefore, unable to repay loans they have taken, both from institutional sources and private moneylenders.
- The small and marginal land holdings (less than 2 hectares) account for 72% of land holdings, and this predominance of **small operational holdings is a major limitation to reaping the benefits of economies of scale.**
 - Since small and marginal farmers have little marketable surplus, they are left with low bargaining power and no say over prices.
- Risk because of **pests, diseases, shortage of inputs like seeds and irrigation**, which could result in low productivity and declining yield; the lower remunerative price; the absence of marketing infrastructure and profiteering by middlemen adds to the financial distress of farmers.
- Also, the **predominance of informal sources of credit**, mainly through moneylenders, and lack of capital for short term and long term loans have resulted in the absence of stable incomes and profits.
- Farmers face price uncertainties due to **fluctuations in demand and supply** owing to bumper or poor crop production and speculation and hoarding by traders.
- The **costs of farm inputs** have increased faster than farm produce prices
- The **absence of a robust market** for buying and selling forward-looking contracts
- Uncertain policies and regulations such as those of the Agricultural Produce Market Committee, besides low irrigation coverage, **drought, flooding and unseasonal rains**, are some other factors that hit farmers hard.

Increasing MSP alone does not help:-

- Imposition of MSP beyond some point is **market distorting** as it severs the link between prices and demand-supply. This can also be inflationary and out of sync with the physical market dynamics.
- RBI has highlighted the announcement of higher MSPs as being one of the major risk factors this year for inflation. This is significant as the government has spoken of providing a mark-up of 50% on cost for all products when deciding on the MSPs for FY19.
- Farmers have got negative returns in several crops prompting many economists to question the usefulness of MSP’s.



- **Input costs:-**
 - The cost of cultivation varies across states while MSP's are based on a weighted all India average so farmers don't get guaranteed profits.
 - MSP's have failed to keep pace with input costs.
- **Only a selected few states such as Punjab, MP, Haryana etc have well developed procurement infrastructure**
- Government procurement at MSP is benefiting the **large traders than farmers.**
 - More than three fourths of farming households don't produce any marketable surplus and hence cannot really benefit from price support.
- There is **no provision in the budget to increase the ambit of farmers** who are covered by MSP and that is a problem in addition to how the MSP is calculated
- Farmers also argue that **MSP is only announced for 25 crops**, while for other crops they have to deal with market volatility. There is no MSP for fruits and vegetables.
- **Only a fraction of the farmers actually have access to MSP.**
 - **MSP often does not reach farmers** as the government does not procure on time and the farmer has to make distress sales at rates lower than the MSP.
- In the recent budget, government has decided to keep MSP for all the unannounced crops of kharif at least at one and half times of their production cost .There is no clarity on how the implementation takes place.
 - There are concerns whether all states would agree with that cost
 - Also as MSP and Inflation highly co-related and any increase in MSP will eventually resulted into price hike of many agricultural products.
- **India's price support programme is also promoting cultivation of water intensive crops** like paddy and sugarcane even in water deficit regions such as Punjab ,Haryana and Maharashtra
- Farmers keep producing the same varieties as cropping pattern is hardly changed in some regions.
- **Higher MSP's over incentivize production** leading to supply glut.
- Hikes in MSP's also **adversely affect exports** by making Indian farm goods uncompetitive especially when international market prices are lower.

Increasing MSP has its advantages:-

- Incentivise production of a specific food crop which is in short supply.
- Protects farmers from any sharp fall in the market price of a commodity.
- Ensures that the country's agricultural output responds to the changing needs of its consumers.
 - Ex: The government hiked the MSP of pulses to expand sowing of pulses.
- Higher farm profits will encourage farmers to spend more on inputs, technology etc
- Protect farmers from the unwarranted fluctuation in prices, provoked by the international level price variations.

Way forward:-

- **Procurement system of the government needs to be streamlined.**
 - There need to be reforms in APMC acts to ensure farmer selling directly to farmers
- **Government needs to analyse the recommendation of the M.S Swaminathan Report** which suggested MSP over C2.
- India should now **explore alternate models** to boost farmer's income and stop relying on MSP's alone.
- A **non inflationary way to resolve the agricultural crisis is to raise farm productivity** through increased investment in irrigation and post harvest infrastructure



- **Based on Telangana experience** it is time to consider a transparent, crop neutral and easier to implement income support programme.
 - The state government gives a payment of Rs.10000 per hectare of cultivable land to all farmers irrespective of the crops they raise.
- **Recommendations by NITI aayog:-**
 - The awareness to farmers and timely dissemination of information till the lowest level so that it would increase the bargaining power of the farmers.
 - Timely payment should be ensured.
 - MSP should be announced well in advance of the sowing season so as to enable the farmers to plan their cropping.
 - Improved facilities at procurement centres, such as drying yards, weighing bridges, toilets, etc.
 - More godowns should be set up and maintained properly for better storage and reduction of wastage.
 - The criteria for fixing MSP should be current year's data and based on more meaningful criteria rather than the historical costs
- The monitoring at every phase for the efficiency of the process and accountability of the people involved in its implementation.
- The ambitious projects like e-NAM, doubling farmer's income by 2022, price stabilisation fund, implementation of Swaminathan and Shanta Kumar committee is required.

Topic: Issues related to direct and indirect farm subsidies and minimum support prices; Public Distribution System- objectives, functioning, limitations, revamping; issues of buffer stocks and food security;

Q) Saddling private sector with the burden of MSP will hurt the interest of both the farmers and the industry. Critically analyze. (250 words)

Financial express

Why this question

MSP is controversial as convincing arguments can be made both in favour and against it. Here the focus of the question is the trend seen recently, where, to secure the interest of the farmers, the burden of MSP is thrust on the private sector. The proposed MSP policy in the case of cotton for purchase by mills is exhibit A. Discussing the impacts and justification of this move is important.

Key demand of the question

The question expects us to emphasize on the following points in our answer

- *The evidences where such a policy is being followed*
- *The impact of imposing the burden of MSP on private sector – whether it would help in securing farmer's income and the effect it would have on the economic viability of the industries. Other impacts that such a policy would have.*
- *Discuss the situations where MSP makes sense and where it doesn't. Suggest alternatives to MSP.*
- *Present your view on whether or not it makes sense for the government to impose the burden of MSP on private sector.*

Directive word

Critically analyze – You need to conclude with a fair judgement, after analyzing the nature of each component part and interrelationship between them. You need to conclude with a fair judgement, after analyzing the nature of each component part and interrelationship between them.



Structure of the answer

Introduction – explain MSP and the rationale behind government's reliance on it. Thereafter, mention the proposed MSP policy for cotton and the experience of sugar. Mention that the impact of this move needs to be analyzed in depth.

Body

- Discuss some of the merits of MSP (the usual). Thereafter, highlight the problem of imposing MSP on private sector. Discuss issues like distortion of market prices, post facto decision making tool, impacts the input cost of businesses making them less profitable etc
- Take the case study of sugar to show that MSP has not served well. One can also examine the case of rice and wheat where the policy despite certain limitations has worked fairly well. However, one should point out the difference in the two situations (PDS – backward linkage) and where MSP makes sense.
- Discuss other advantages / disadvantages like – issues in procurement, crops being grown which are ill suited to the climatic conditions etc.
- Present your view on whether the burden of MSP should be imposed on private sector by summarising the arguments made above

Conclusion – Highlight some alternative to MSP as a way forward such as a robust futures market for agricultural commodities.

Background :-

- Minimum Support Price (MSP) is a form of market intervention by the Government of India to insure agricultural producers against any sharp fall in farm prices.
- The MSPs served as the floor prices and were fixed by the Government in the nature of a long-term guarantee for investment decisions of producers, with the assurance that prices of their commodities would not be allowed to fall below the level fixed by the Government, even in the case of a bumper crop.

Issues with MSP:-

- Imposition of MSP beyond some point is **market distorting** as it severs the link between prices and demand-supply. This can also be inflationary and out of sync with the physical market dynamics.
- RBI has highlighted the announcement of higher MSPs as being one of the major risk factors this year for inflation. This is significant as the government has spoken of providing a mark-up of 50% on cost for all products when deciding on the MSPs for FY19

Private sector and MSP:-

- There have been signals recently that the cotton MSP may become the price at which mills will have to buy the crop. Hence, instead of the government bearing the cost as happens with public procurement of rice and wheat **the burden could be transferred to yarn/textile mills.**
- The logic can then be extended to **pulses** where mills can be made to buy pulses at the MSP in case market prices come down due to surplus production.
- The same can also hold for **oilseeds** where the edible oil manufacturers will be forced to buy oilseeds at MSP.

Issues with private sector handling MSP:-

- **Sugar experience:-**
 - Price of sugar is determined by the market, and the high production of cane leads to fall in prices. But, farmers have to be paid the SAP or FRP, and **mills cannot honour this commitment unless they are able to sell the sugar in the market at price that offsets the SAP/FRP. This is the core problem facing the sugar industry** where such mismatch has led to the build-up of large arrears that are due to farmers
 - Mills also have had to borrow to honour these contracts when they are unable to sell sugar at remunerative prices.



- Many say the concept itself is fraught with dangers and **could minimise the role of the Food Corporation of India (FCI) in procurement operations.**
- Encouraging private players to procure commodities other than wheat and rice on behalf of the government has its own challenges **including storing and transportation.**
 - **Storage :-**
 - For paddy and wheat, FCI has built adequate storage capacity in all the states, except Bihar, Jharkhand, West Bengal and the north-eastern states, so procurement of wheat and paddy is possible and storage is not a major problem.
 - However, **if other commodities are to be procured at MSP, there will surely be shortage of space in almost all the states as the storage requirement assessed by FCI for each district took into account only the procurement of wheat and paddy.**
 - **Reimbursement of losses in procurement to private parties:-**
 - Private sector won't procure wheat, rice or any other commodity at MSP for free and **if their commission is less than cost, then they won't come.**
 - MSP operations are likely to result in losses and unless the government of India gives an assurance that it will bear the losses, private sector is unlikely to come forward.
 - Textiles and related products account for around 12% of exports, and artificially higher cotton prices could make them less competitive. **Further, to ensure that the MSP is paid, the government will have to necessarily tweak trade policy because the MSP regime will not be effective in case companies import cotton at a lower cost. This** will affect the competitiveness of industry, considering that the entire textile chain is an important component of Indian exports.

Way forward:-

- A better way out is to actually **make use of hedging offered via commodity exchanges.**
 - To begin with, farmers must be allowed to have the entire array of commodities available on futures trading platforms.
 - In the case of sugar, if all the mills hedged part of their output on, say, NCDEX where there are active contracts, then the risk of falling prices would have been mitigated. For this to be effective, there is the requirement of long-term contracts in all these products.
- **Creating a solid structure where farmers and companies deal on commodity futures platforms to hedge the price risk is the perfect solution and the effort must be on deepening these markets.** This will be a win-win solution and the constant concerns that keep governments worried about whether the farmer is realising remunerative prices and whether the consumer is paying a comfortable price is answered by the markets.

Topic: Major crops cropping patterns in various parts of the country, different types of irrigation and irrigation systems storage, transport and marketing of agricultural produce and issues and related constraints; e-technology in the aid of farmers

Q) Discuss the challenges faced by the farmers in availing benefits under the PMFBY. Also, suggest some points to improve the performance of the scheme. (250 words)

Reference

Why this question

Pradhan Mantri Fasal Bima Yojana (PMFBY) is a flagship programme of the incumbent government. It is one of the programs included in Prime Minister's award for excellence in public administration 2018. The issue is related to GS3 syllabus under the following heading-

Major crops cropping patterns in various parts of the country, different types of irrigation and irrigation systems storage, transport and marketing of agricultural produce and issues and related constraints; e-technology in the aid of farmers.



Key demand of the question

The question simply wants us to write in detail about the problems faced by farmers in availing benefits under the scheme. It also wants us to give suggestions to improve the performance of the scheme.

Directive word

Discuss- we have to write in detail about both demands of the question- problems faced and suggestions for improvement. Be as exhaustive as possible in highlighting the number of problems. And also feel free to suggest radical but plausible ideas to improve the performance of the scheme.

Structure of the answer

Introduction- *briefly describe the aim of PMFBY scheme and its strategy (providing financial support to farmers suffering crop losses/ damage, stabilizing income of farmers, adopt innovative and modern agricultural practices, ensure the flow of credit to the agriculture sector).*

Body-

- *Discuss in points the difficulties faced by farmers in availing benefits under the scheme. (e.g lack of awareness among the non-loanee farmers, delay in disbursal of claims, non-availability of information related to crops, complicated process of claiming insurance, difficulty in conducting crop cutting experiments, damage from wildlife not covered, high premium amount on cash crops)*
- *Discuss in points, how the scheme could be improvised.*
- *e.g simplifying the process of applying for and claiming the Crop Insurance, conduct IEC activities to motivate farmers and enrol them under the scheme, the convergence of geotagging of Crop cutting experiments with the digitisation of land records, use of satellite imagery for assessing crop damage, dissemination of information to farmers regularly.*

Conclusion- *mention the need of agriculture department and revenue authorities to work in tandem for the inclusive coverage of all farmers under the scheme.*

Pradhan Mantri Fasal Bima Yojana

- It is aimed at shielding farmers from crop failures and yield losses due to vagaries of climate through insurance.
- It compensates farmers for any losses in crop yield.
- In the event of a crop loss, the farmer will be paid based on the difference between the threshold yield and actual yield.
- The scheme is compulsory for farmers who have availed of institutional loans.
- The scheme insures farmers against a wide range of external risks like droughts, dry spells, floods, inundation, pests and diseases, landslides, natural fire and lightning, hailstorms, cyclones, typhoons, tempests, hurricanes and tornadoes.
- The scheme also covers post-harvest losses up to a period of 14 days.

Importance of this scheme:-

- The PMFBY is an attempt to plug the holes in the older crop insurance schemes especially being
 - Their limited risk coverage
 - For crops where the premiums were steeper insurance companies proportionally reduced the sum insured.
 - Compensation fell way short of even the farmer's cost of production.
- The Fasal Bima Yojana has done away with this cap on premium. **The sum insured per hectare for a farmer is now decided by the District Level Technical Committee and is pre-declared and notified by the State Level Coordination Committee on Crop Insurance.**



- **The farmer also pays less**
 - The premium is 2 per cent of the sum insured for all kharif crops and 1.5 per cent of it for all rabi crops.
 - For horticulture and commercial crops, the premium is 5 per cent of sum covered.
 - The remaining premium is paid by the government.
- The scheme also **envisages using technology**
 - To capture and upload data of crop cutting
 - To reduce delays in claim payment to farmers
 - Remote sensing to reduce the number of crop cutting experiments.
- Subsidised premiums and prompt claims settlement enabled by remote sensing and GPS technology should **help substantially expand coverage.**
- An increase in the area insured should also bring down premium rates, through spreading of risks across more farmers. That would **also help contain the government's subsidy burden.**
- **Government has further targeted at increasing the coverage. In Budget 2018-19, allocation to the PMFBY scheme is Rs 13,000 crore and a target of increasing coverage to 98 million ha gross crop area has been set.**

Challenges faced by farmers:-

- Making the insurance business sustainable with actuarial premium rates is **not going to help raise farmers incomes.**
- **Insufficient reach and the issue of penetration.**
- Most states failed to provide smart phones to revenue staff to capture and upload data of crop cutting, which continues to come with enormous delay.
- There is hardly **any use of modern technology in assessing crop damages.**
- **Gaps in assessment of crop loss:**
 - The sample size in each village was not large enough to capture the scale and diversity of crop losses.
 - In many cases, district or block level agricultural department officials do not conduct such sampling on ground and complete the formalities only on paper.
 - There is lack of trained outsourced agencies, scope of corruption during implementation and the non-utilisation of technologies like smart phones and drones to improve reliability of such sampling
 - Less number of notified crops than can avail insurance
- **Inadequate and delayed claim payment:**
 - Insurance companies, in many cases, did not investigate losses due to a localised calamity and, therefore, did not pay claims.
 - Only 32 per cent of the reported claims were paid out by insurance companies, even when in many states the governments had paid their part of premium.
- **High actuarial premium rates**
 - Insurance companies charged high actuarial premium rates
- **Massive profits for insurance companies**
 - If states delay notifications, or payment of premiums, or crop cutting data, **companies cannot pay compensation to the farmers in time.**
 - There have been farmers protests in various states against compulsory coverage of loanee farmers under this scheme. Farmer activists fear that this scheme might end up benefitting insurance companies more than the farmers.



- **Coverage only for loanee farmers:**
 - PMFBY remains a scheme for loanee farmers who take loans from banks are mandatorily required to take insurance. Like previous crop insurance schemes, **PMFBY fails to cover sharecropper and tenant farmers**
- **Poor capacity to deliver:**
 - There has been no concerted effort by the state government and insurance companies to build awareness of farmers on PMFBY.
 - Insurance companies have failed to set-up infrastructure for proper implementation of PMFBY.
 - There is still no direct linkage between insurance companies and farmers.
 - Insured farmers receive no insurance policy document or receipt.
 - Delayed notification by state governments
- **PMBY is not beneficial for farmers in vulnerable regions** as factors like low indemnity levels, low threshold yields, low sum insured and default on loans make it a poor scheme to safeguard against extreme weather events.
- However, **merely increasing the budget allocation for PMFBY scheme might not help the farmers.**
- **CAG report:-**
 - Private companies are not properly monitored and premium subsidy is released to them simply on the basis of affidavits provided by these companies without checking actual situation on the ground.

Way forward:-

- There is an urgent need to link the **insurance database with Core Banking Solution (CBS)** so that when premium is deducted from a farmer's bank account, the bank sends him a message informing about the premium, sum insured and name of insurance company.
- There is a **need for a total insurance package** like seed insurance through replanting guarantee programme, crop cycle insurance, prepaid insurance card etc
- **Insurance unit has to be brought down to individual farm level**
- **Making claims payment fast and transparent**
 - There should be strict compliance of timelines with regard to the process of claim settlement to provide adequate and timely compensation to farmers.
- **Danger of discouraging mixed cropping and crop diversification**
 - A limited number of crops are notified by states under PMFBY. This can act as an impediment to crop diversification.
 - **PMFBY will have to make insurance relevant to farmers by including more and more crops under notification and by allowing insurance for mixed cropping.**
- **Improve scheme monitoring and grievance redressal mechanism**
 - Toll-free number should serve as a one-stop solution for crop insurance. Farmers should be able to avail of a single window that is accountable to them for all aspects of the scheme.
- **Coverage of losses expanded:-**
 - Coverage of tenant and sharecropper farmers should increase
- **Awareness:-**
 - Farmers must be informed before deducting crop insurance premium. They must be given a proper insurance policy document, with all relevant details.
- **Capacity building:-**
 - Panchayati Raj Institutions and farmers need to be involved at different stages of implementation.



- Robust assessment of crop loss should be done through capacity building of state governments, involvement of PRIs and farmers in loss assessment, auditing and multi-level checking to ensure credibility of data and testing incorporating technology such as remote sensing, drones and online transmission of data.

Q) Critically examine the idea of predicting food price inflation through online prices in India. (250 words)

EPW

Why this question

Food price inflation is an important issue in Indian economy. With increasing stress on e-Governance, smart cities, internet of things, big data and online transactions, the idea of predicting food price inflation through online prices in India has been flouted. The issue is related to GS3 syllabus under the following heading-

Major crops cropping patterns in various parts of the country, different types of irrigation and irrigation systems storage, transport and marketing of agricultural produce and issues and related constraints; e-technology in the aid of farmers.

Science and Technology- developments and their applications and effects in everyday life.

Key demand of the question

The question wants us to discuss the possibility of using online prices for predicting food price inflation in India. We have to dig deep into the issue and see the general modality as well as mention its advantages and limitations.

Directive word

Critically examine- We have to dig deep into the issue and discuss the implications in the sense that we have to discuss the advantages of the given method as well as mention its limitations. We also have to form a personal opinion on the whole issue.

Structure of the answer

Introduction– *mention the present method and agency of data collection, for predicting food price inflation in India.*

Body-

- *Discuss the growing digital footprint and increased volume of online transactions in India which call for using online transactions for predicting food inflation in India. Discuss which items can be used as representative etc.*
- *Discuss the advantages of such an action.*
e.g data collection is quicker, cheaper, and more efficient than conventional methods. data can be obtained much more frequently, the quantum of data is often large and the quality better, since it circumvents the possibilities of human error etc.
- *Discuss the limitations of such an action.*
e.g lack of empirical research, most of the online transactions are city-based and hence will not reflect rural realities etc.

Conclusion– *Mention your personal opinion e.g there is need for more empirical evidence before taking a call on such a decision etc.*

Background:-

- India is experiencing high rate of economic growth in the last two decades but the growth has been coupled with high rate of food price inflation. The growth has been very uneven across sectors with agriculture remaining very sluggish.



- The increase in per capita income has significantly increased the demand for food but agricultural production has failed to keep pace with the growing demand. **The theoretical explanations and time series econometric results establish that increase in per capita income and shortage in supply are responsible for price rise**

Idea of predicting price inflation through online prices :-

- In India at present data is collected through sample collection and household survey in order to predict the food inflation.
- However online index does well in capturing the fluctuations of the price movements of the product subgroups.

Advantages of using online prices over price data collected through traditional means are :-

- The data collection is **quicker, cheaper, and more efficient** than conventional methods.
- **Data can be obtained much more frequently** through special softwares, which have capabilities of capturing through a vast number of items in online marketplaces.
- The quantum of data is often large and the quality better, since it **circumvents the possibilities of human error**.

Negatives:-

- **Urban bias:-**
 - Even though the e-commerce industry is growing at the rate of over 60% per year, **market penetration has largely taken place only in the 10-odd major metropolitan areas of India**.
- Consequently, it is a **challenge to replicate the basket used to calculate official statistics, using online prices only**.
- Therefore, whether online prices track the official price index is an empirical question.
- Challenge faced in constructing the online index was the **difficulty in mapping cooked items, that is, finding online substitutes for items such as prepared meals and snacks, cup of tea, etc.**

Conclusion:-

- There is a need for more rigorous empirical exercises that need to be conducted to validate online price data in the future.

Q) Indian agriculture has entered the era of permanent surpluses, which is further worsening the condition of the farmers. Critically Comment. (250 words)

Indian express

Why this question

Although Indian agriculture suffers from several perennial problems, permanent surpluses have only been a recent phenomena. Instead of ameliorating the condition of the farmers, the phenomena has further hurt the farmers. The issue is related to GS 3 syllabus under the following heading-

Major crops cropping patterns in various parts of the country, different types of irrigation and irrigation systems storage, transport and marketing of agricultural produce and issues and related constraints; e-technology in the aid of farmers

Issues related to direct and indirect farm subsidies and minimum support prices; Public Distribution System- objectives, functioning, limitations, revamping; issues of buffer stocks and food security; Technology missions; economics of animal-rearing.

Key demand of the question.

The question wants us to express our knowledge/ understanding of the issue and present our opinion. We have to explain how Indian agriculture has entered the permanent surplus era, what impact it has on farmers and what should be done in this regard.



Directive word

Critically Comment- We have to express our personal opinion and understanding of the issue backed by adequate and proper/valid justification.

Structure of the answer

Introduction – Explain the meaning of the term permanent surplus in agriculture.

Body-

- Discuss some statistics related to agricultural production and mention examples of places where farmers faced the problems of surplus production coupled with lower prices.
- Discuss how India has reached trade surplus- technology, infrastructure, diffusion and adoption rate of technology/ innovation etc.
- Discuss the good and bad of permanent/ near-permanent surplus in agricultural production.

Conclusion– Express your opinion in the form of what should be done in this matter- e.g providing proper knowledge inputs to farmers etc.

Background:-

- Traditionally, the supply in most crops was like no matter the price, the quantity harvested and sold remained virtually the same. In the recent times it is supply response i.e., the ability of farmers to increase production when prices go up is happening.

Reasons:-

- **Technology:-**
 - **Better seeds and faster diffusion of technology have made a difference.** HD-2967 wheat variety released in 2011, could cover 10 million hectares area in a single season within five years.
 - Similarly impactful has been Co-0238, a cane variety that not only yields more crop per hectare, but also more sugar from every tonne crushed. First planted in 2013-14, it now accounts for well over half of the cane area in North India.
 - With planting of hybrids paddy yields have gone up from 15 quintals to 25 quintals per acre even in the Adivasi areas of Jharkhand, Chhattisgarh and Odisha.
 - The technologies be it hybrid seeds, high-density cultivation using tissue-cultured plants, or drip irrigation have been implemented.
- **Government push and infrastructure development:-**
 - The Operation Flood programme helped boost India's milk production from 22 mt in 1970-71 to 66.2 mt in 1995-96.
 - More scientific dairying husbandry practices as investments in infrastructure of especially rural roads and electricity which have enabled milk to be procured from the interiors and chilled at village collection centres.
- **Due to surplus production India has food security and exports would increase leading to revenue generation ultimately benefitting the whole economy**

How this hurts farmers:-

- **Consumer bias:-**
 - In most years, for the majority of agri-products, the policymakers used restrictive export policies to keep domestic prices low. This showed the pro-consumer bias in the policy complex.
- **Aggressive cultivation led to plunge in demand:-**
 - Once prices have increased farmers cultivated the crop aggressively leading to plunging of prices.
 - Two years ago, garlic fetched an average Rs 60 per kg rate in Rajasthan's Kota mandi. Enthused by it, farmers in the Hadoti region planted more area, only to see prices halve last May.



- Similar was the case for other vegetables.
- **Farmers income remained low:-**
 - India had record food production in 2017-18, but farmers income remained low and stagnant.
- The government continues to use old draconian measures, including stocking restrictions and bans on exports and futures trading, to even small increase in food prices. **Such steps may bring temporary relief to consumers, but end up hurting farmers.**
- **Factors which complicate the above issue are:-**
 - **Lack of adequate storage facilities lead to wastage.** For instance farmers dump truckloads of vegetables on road.
 - Land degradation has become a major challenge and cost of farming is constantly rising with usage of fertilizer, pesticides, expensive seed varieties, machinery, labour cost, rise in fuel prices, vagaries of monsoon. This further complicates the livelihood of farmers
 - In India, farmers are poor due to low productivity (yield per hectare) of all major crops.
- **Prevalence of APMC markers, trader cartels** due to which low price for agri produce is offered specially due to bumper crop production.
- A bumper crop **can pull down prices in wholesale markets.** Price spikes after a poor crop are inevitably dealt with through cheap imports in a bid to protect consumers. The opposite is done less frequently. **The bountiful rains of 2016 resulted in record farm output. Prices crashed. Farmers are reported to have not been able to even recover the cost for some crops.**
- The prospects of a good monsoon pushed up rural wages. **The reality of rock bottom prices then destroyed profit margins.**

Way forward:-

- **One way to reduce price risk is through price deficiency payment, which has been advocated by NITI Aayog.** In price deficiency payment, farmers can be compensated through direct benefit transfer if prices fall below a predetermined threshold level. For this, farmers may be asked to register with relevant details at the nearest mandi. **A deeper derivative market in agricultural commodities will also help farmers in hedging against price risks.**
- **Actual impact of higher remunerative farm prices can be contained by making markets more efficient and removing middlemen from the system.**
- Building a common agriculture market is also necessary.
- Government policy should focus not just on higher production but also on helping farmers manage risks.
- **First increase productivity through:-**
 - It is observed that **farmers are now using more urea as compared to phosphorus and potash carrying fertilisers.**
 - Indian soils are also deficient in micro-nutrients organic carbon. We need to implement the government's policy of integrated nutrient management to increase productivity.
 - There is a need to bring **more and more cultivable area under micro-irrigation (drip/sprinkler irrigation),** which would greatly reduce consumption of water while increasing productivity.
- **Agricultural extension services need strengthening, to impart new scientific knowledge to farmers.** This should be facilitated through noted NGOs and companies in agro-business.
- Further, each district should have 2-3 centres where farmers can meet and exchange knowledge on matters of crop insurance, banking and supply of inputs etc. **These centres should assist them to integrate with eNAM for getting better price of their produce.**
- **India needs to create centres of excellence in our agricultural universities for preparing region-wise strategies to raise crop yield.**



- The report of the committee on Doubling of Farmers Income has made some recommendations to resolve **land pooling and other issues**. If it happens, it may also lead to collaborative farming, in which a group of farmers can start their own venture.

Topic: Infrastructure: Energy, Ports, Roads, Airports, Railways etc., Investment Models.

Q) Cooperative energy generation may present one of the most viable and self-sustaining solutions for rural communities. Discuss, in the light of India's universal electrification achievement. (250 words)

EPW

Key demand of the question.

The question wants us to analyse India's universal electrification achievement and identify its deficiencies/ what more needs to be done. It then wants us to discuss how Cooperative energy generation may present one of the most viable and self-sustaining solutions for rural communities in India.

Directive word

Discuss- we have to write in detail about the key demand of the question- what more needs to be done after universal electrification and feasibility/ desirability of cooperative energy generation.

Structure of the answer

Introduction– *Discuss the meaning of cooperative energy generation and mention the examples of countries where it has been successfully implemented.*

Body–

- *Mention India's universal electrification achievement, low per-capita consumption, very low threshold for defining an electrified village, lack of physical access/ connection and economic capacity to buy electricity and bring out the imperative to increase physical and economic access to electricity.*
- *Discuss the advantages of cooperative electricity generation. E.g better management, better resource utilization, higher revenue generation/ collection etc.*

Conclusion- *Mention the need for low cost long term financing and need for outside vigil on the management etc. and other steps that should be taken.*

Background:-

- The provision of adequate and affordable electricity is therefore paramount to the country's long-term development strategy.

India's universal electrification :-

- Recently Indian government announced that all inhabited villages now enjoy electrification. This signalled a significant milestone in the country's development. It is an achievement that will raise aspirations in the remotest districts.
- **According to the government data, all of India's 597,464 census villages have been electrified**
- Subnational endeavours and the Centre's pump priming seem to have addressed the regional imbalances in electrical development which concerned India's early planners

Issues with India's electrification:-

- **Definition of electrification:-**
 - The government classifies villages as electrified if public buildings have electric connections and merely 10% or more of the village residences have connections, withholding concerns of supply quality.
 - Only a small fraction 8% of the electrified households have 100% connectivity.



- 80% of rural households surveyed in Bihar have no (or extremely poor) access to electricity, despite the government reporting Bihar's village electrification rate as 95.5%.
- **Regional imbalances in electricity** access have persisted:-
 - Seven States (Uttar Pradesh, Bihar, Odisha, Jharkhand, Assam, Rajasthan and Madhya Pradesh) account for 90% of un-electrified households.
- **Distribution infrastructure is overburdened**, as the demand has grown, causing a high level of technical losses and frequent breakdowns.
- India's **per capita electricity consumption** in 2014 was quite low at about 25% of the world average.
- The most significant barrier to expanding access to remote areas is **cost recovery**:-
 - Utility companies hesitate to build out transmission lines to remote villages, which will have lower demand than high-density urban populations and will generate a lower return on investment for private or municipal utilities dependent on profits.
- **Reliability constraints** result from electricity theft, transmission losses, and inefficient distribution.
- **Affordability is a concern for rural populations** because of distance from distribution centres and low population density, both of which drive up the price of the service.
- While India is making significant investments in rural electrification schemes, such as the Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY), and its implementation arm, the Rural Electrification Corporation (REC), **cooperatives have not been emphasised as a major model**.
- **Renewable energy constraints**:-
 - The evidence from States such as Maharashtra, which made an claim to full electrification six years ago **relying partly on solar power, shows that theft, damage and lack of technical capacity can pose serious hurdles**

Cooperative energy generation and how is it sustainable:-

- Member-managed cooperatives are **often more responsive to community concerns and needs and can operate largely independently from state utilities and state governance**, which may help ease corruption, increase sustainability, and reduce inefficiencies by taking advantage of more direct feedback loops.
- **International experiences**:-
 - Many countries have experimented successfully with electric cooperatives to close the gap in rural electrification and generate and/or distribute electricity at a local, decentralised scale.
 - The cooperative model has been successful across many international contexts, including Argentina, Bangladesh, Bolivia, Brazil, Chile, Costa Rica etc.
 - **Costa Rica:**
 - This country has reached a national electrification rate of 95% through the creation of electric cooperatives and expansion of the national electric company's services.
 - **Nepal:**
 - The Nepal Electricity Authority (NEA) passed Community Electricity Distribution Byelaws in 2003 to unbundle electricity generation from distribution, meaning that cooperatives could buy wholesale electricity from producers and distribute it locally rather than wait for utilities to extend services.
 - Decades later, **cooperatives remain the primary electricity suppliers in rural areas of the US.**
 - The US created a large national agency to promote and organise the expansion of rural electric cooperatives and install electric wiring in rural households across the country. This agency ensured that cooperatives functioned effectively mainly as distribution hubs, which purchased wholesale electricity from utilities and met customers' needs.
 - **Experiences with off-grid solar companies in Kenya have shown that rent-to-own or leasing programmes can boost appliance uptake and electricity demand in rural developing areas.** It is pivotal that electricity



access policies integrate appliance adoption mechanisms to stimulate demand as well as socio-economic welfare, for example, better educational and health outcomes.

Way forward:-

- There are already institutional structures in place, such as the NCDC, which could be used to jumpstart electricity cooperatives
- A combination of financial tools could ensure stronger demand and welfare gains, such as low-interest loans as in the case of the US, community cost-sharing as in the case of Nepal, or covering operating losses during the commercialisation phase as in the case of Bangladesh.

Conclusion:-

- Electricity cooperatives are not the only option for closing the last-mile gap, but also **in combination with existing programmes for grid electrification and distributed generation, cooperatives may present one of the most viable and self-sustaining solutions for rural communities.**

Q) Offshore wind generation offers several benefits over onshore wind energy generation but there are many challenges involved. Discuss. (250 words)

Economic times

Reference

Why this question

The central government has recently revealed its aim to build 30 GW of offshore wind energy. Offshore wind energy offers several benefits over onshore wind energy. But there are also several challenges involved in exploitation of such energy. The issue is related to GS 3 syllabus under the following heading-

Infrastructure: Energy, Ports, Roads, Airports, Railways etc.

Key demand of the question.

The question wants us to describe the benefits of offshore wind energy generation in general and also vis a vis onshore wind energy generation. It also wants us to enlist and describe the challenges involved in harnessing offshore wind energy in India.

Directive word

Discuss- This is an all-encompassing directive. We have to write in detail about both the key demands of the question- Opportunities i.e benefits as well as challenges involved in harnessing offshore wind energy.

Structure of the answer

Introduction– Mention that India has a long coastline, high economic growth rate, high energy demand, increasing pollution which necessitates exploitation of all economically feasible renewable energy generation methods.

Body-

- *Discuss in points the benefits of offshore wind energy generation over onshore wind energy generation. E.g more area available, lesser turbulence, less visual impact, more consistent and stronger winds, closeness to load centres, lower gestation period etc.*
- *Discuss in points the challenges involved. E.g lack of bathymetric data and wind resource maps, high initial costs, need for policy and regulatory support in the form of a dedicated mission on the lines of JNNSM etc.*

Conclusion- Bring out a fair, concise and a balanced opinion on the overall scope of onshore wind energy generation in India.



Background:-

- In order to beef up its clean energy portfolio, the government wants to build 30 GW offshore wind capacity by 2030, a move which may bring India in the list of leading markets in the segment.
- Given India's coastline of 7,600 km, the country has enormous potential for offshore wind energy and it can potentially repeat the success achieved in onshore wind energy
- India has an estimated 127 gigawatts (GW, or 1,000 MW) of offshore wind power potential, mostly off the coasts of Tamil Nadu, Gujarat, and Maharashtra.

Off shore and on shore wind energy generation:-

- Offshore wind power or offshore wind energy is the **use of wind farms constructed in bodies of water**, usually in the ocean on the continental shelf, to harvest wind energy to generate electricity.
- Wind turbines harness the energy of moving air to generate electricity
- Onshore wind refers to turbines located on land, while offshore turbines are located out at sea or in freshwater.

Benefits:-

- Offshore wind turbines are being used by a number of countries to harness the **energy of strong, consistent winds that are found over the oceans.**
- **Greater area available for setting up large projects:**
 - One primary reason for moving towards off shore projects is the lack of suitable wind turbine sites on land.
- **Higher wind speed than onshore locations:**
 - Wind speeds are significantly higher at off shore locations. An increase of about 20 per cent some distance away from the shore is not uncommon.
 - Offshore **winds tend to blow harder** and more uniformly than on land.
 - Wind speeds of only a few miles per hour can **produce a significantly larger amount of electricity.**
- **Lower turbulence intensities:**
 - Wind is less turbulent at sea than over land which results in lower mechanical fatigue load and thus longer lifetime for the turbines.
- **More consistent wind speed:**
- **Less visual impact:**
 - As these sites are located far from land they have less visual impact which helps with public acceptance issues.
- **Close to load centres:**
 - The off shore wind farms are usually located near to the cities and load centres and thus transmission losses are minimised.
- Offshore **wind speeds tend to be faster than on land.**
- **Offshore wind speeds tend to be steadier than on land.** A steadier supply of wind means a more reliable source of energy.
- **Many coastal areas have very high energy needs.** Building offshore wind farms in these areas can help to meet those energy needs from nearby sources.
- These support larger wind turbines and so generate higher amounts of power. Given their location, these facilities **face minimal space constraints and physical obstructions to wind flow.**
- **Offshore wind farms have many of the same advantages as land-based wind farms.**
 - They provide renewable energy
 - They do not consume water



- They provide a domestic energy source
- They create jobs
- They do not emit environmental pollutants or greenhouse gases.
- **Steps taken by Indian government to harness offshore wind energy :-**
 - More recently, in 2018, government said it was exploring options to **set up a small government-owned offshore wind farm near the Pamban Island off the Tamil Nadu coast**. The idea is to have four or five windmills with a capacity to generate 6 MW of power each.
 - Meanwhile, one of India's largest windmill manufacturers, **Suzlon, has set up its own offshore met station off the coast of Gujarat to collect wind data and study the region's potential**
 - The government-owned research and development agency, National Institute of Wind Energy (NIWE), has sought expressions of interest from wind power companies to **set up an offshore wind farm with a capacity of around 1,000 megawatts (MW) in the Gulf of Khambat, off the coast of Gujarat**
 - Development of offshore wind is a timely progression for India. The resource offers much higher PLFs that position it closer to base load generation, and now with larger sized turbines it is much more viable.

Limitations:-

- **Cost:**
 - The capital cost of such projects is very high as compared to onshore wind power projects. Not much has been done in the offshore wind field in India as the capital cost of such projects is very high and the necessary supply chain is also not established.
 - Offshore wind farms can be expensive and difficult to build and maintain.
 - The production and installation of power cables under the seafloor to transmit electricity back to **land can be very expensive.**
- **DATA:**
 - The data required for the calculation of o- shore wind potential and identification of suitable sites is not available.
- **Bathymetric Data:**
 - This data gives the information about the sea depth at various positions. At present there is no such data available for the Indian sub-continent and no such data was available from any other source.
- **Transmission losses:-**
 - Wave action, and even very high winds, **particularly during heavy storms or hurricanes**, can damage wind turbines.
- Effects of offshore wind farms on marine animals and birds **are not fully understood.**
- **Local protests:-**
 - Offshore wind farms built within view of the coastline may be **unpopular among local residents**, and may affect tourism and property values.
- **Another major constraint is grid.** As there is no clarity on how to make transmission lines available.
- **Short gestation period:**
 - A mega size and ultra mega size thermal or hydro power project may have a gestation period of 3-6 years whereas as an off shore wind project has a gestation period of 1-2 years, depending upon depth and distance from shore.
- **Issues with manufacturing or procuring equipment:-**
 - Offshore wind farms typically have larger turbines of around 6 MW capacity (as against the average of 2.5 MW machines used onshore) and longer windmill blades.



- But most firms in India don't yet make such high-capacity machines, so components will have to be imported.
- The factories' configuration has to be changed. In terms of logistics, putting larger blades on Indian roads is next to impossible. **That's the reason wind blades on average are smaller in India than in China as the roads are smaller here. This might dampen investor interest.**

Conclusion:-

- The government needs to allow incremental tariffs as the cost of setting up an offshore wind project is way higher.
- **Regulatory and policy framework :-**
 - The Electricity Act 2003 defines various sections like, sec. 3, sec. 61 and sec. 86 (1)(e) which mandate the policy formulation and optimal use of all resources including renewable sources of energy.
 - Jawaharlal Nehru National Solar Mission (JNNSM) is a dedicated framework for the promotion of the solar energy. Similarly "India Hydrocarbon Vision-2025" is a strategic model for oil exploration in the Indian sedimentary basins. The offshore wind also needs such dedicated frameworks and policies for its promotion and to establish a presence in the Indian power market.
- The need of the hour is a clean and sustainable energy source and o- shore wind power can play a significant role. In India off shore wind power still remains untapped and given the power deficit in the country this huge potential needs to be tapped.

Topic: Science and Technology- developments and their applications and effects in everyday life

Q) The applications of blockchain go much beyond its role in crypto currencies. Examine (250 words)

Financial express

Why this question

The application of blockchain is increasing and is much moving much beyond its use in digital currencies. We need to be aware of the applications and the importance of blockchain in various sectors.

Key demand of the question

The question demands us to discuss the applications of blockchain in various sectors apart from cryptocurrencies. We will thereafter discuss the impacts of such usage.

Directive word

Examine – When you are asked to examine, you have to probe deeper into the topic, get into details, and find out the causes or implications if any .

Structure of the answer

Introduction – Define blockchain and mention that it's role is enhancing

Body – Discuss how blockchain is used in cryptocurrencies. thereafter, mention how the application of blockchain has started moving beyond cryptos and its application is moving into fields like social development, banking etc

Conclusion – Mention the huge role that blockchain can play in our developmental journey and highlight how indian government in focussing on blockchain.

Blockchain:-

- Blockchain is a type of software that powers a database for verifying transactions made online.
- The idea is that by making the database public, no one can cheat the system by editing records because everyone using the system spots them in the act.



- The decentralized and distributed nature of blockchain prevents one person or company from reigning supreme over system; instead, everyone can help run, manage and secure it.
- The blockchain lets people who are part of this super-computer perform functions such as verification of transactions and contracts, and the updating and maintenance of these records in the form of trustworthy ledgers, tasks that are normally reserved for established intermediary organisations such as banks and legal firms, and be rewarded for it.
- This core feature of the blockchain creates a space for trusted transactions in the digital space that have never been possible before.
- A key property of blockchain technology, which distinguishes it from traditional database technology, is **public verifiability, which is enabled by integrity and transparency.**

Crypto currency applications:-

- The **cryptocurrency Bitcoin** is the first successful application of this technology. Even though there are mixed standpoints regarding the credibility, scalability and practicality of digital currencies, the core technology blockchain, undoubtedly has tremendous value.
- Annual global economic output is over \$90 trillion, with almost 3% of the amount going to various financial toll collectors such as banks, and credit card platforms.
- The technology supports cryptocurrencies such as Bitcoin, and the transfer of any data or digital asset. Spearheaded by Bitcoin, blockchains achieve consensus among distributed nodes, allowing the transfer of digital goods without the need for centralized authorisation of transactions.

Beyond crypto currency applications:-

1. Telecom sector:-

- **Cost**
 - Blockchain could lower network costs in more ways than one. Service providers could save money with the technology by relying less on third parties to complete a transaction.
- **Security**
 - The decentralization of blockchain could help better secure the privacy of the end user experience.
- **Customer trust:-**
 - **Blockchain also provides a greater level of automation and leads to more streamlined processes within organisation.**
 - Analysing such vast amounts of accurate customer data can provide leaders with greater insights into customer behaviour and guide their strategy.
- **Internal processes:**
 - The processes such as OSS (Operation Support System) and BSS processes (Business Support System) such as billing and number portability databases can be streamlined using blockchain
- **Identity management**
 - Operators could develop identity management tool that are accessible to organizations, devices and applications.

2. Banking:-

- **Mobile money:**
 - Blockchain has enabled cost-effective international remittances across the globe with very minimal transaction charges.
- **Checking fraud**
- Understanding this cost-saving potential, several international banks and state-owned banks in Russia, Saudi Arabia and the UAE have started working on blockchain-powered financial solutions.



3. Blockchain in digitalization of land records:-

- **Andhra Pradesh is currently working with private firms to secure land records** in its new capital, Amaravati, using blockchain.
- A blockchain-secured record-keeping process will collect, store and provide access to information quite differently than a conventional process. After reaching consensus on what constitutes a valid record, **market participants use cryptography and consensus algorithms to create or modify records.**
- There is **no need for a central authority to keep records** as they are distributed across a system of networked computer nodes.
- **All participants can see and use the latest version of the record without relying on anyone else.** Data stored using blockchain is **secure, transparent, easy to access, and hard to dispute.**
- **Not hard to imagine lenders seeking blockchain security for land records as it would dramatically cut down risks in lending against property.**
- Overlaying blockchain on lands pledged against those mortgages could be a great start. Similarly, the newly set up information utility, **National e-governance Services Ltd (NeSL), could also be used to drive blockchain-based record-keeping for underlying collateral like land.**

4. Blockchain applications could be further extended to sectors such as insurance, law, real estate and digital art, and could be used to further strengthen national institutions, including the judiciary and the Election Commission.

5. Critical citizen information like land records, census data, birth and death records, business licenses, criminal records, intellectual property registry, electoral rolls could all be maintained as blockchain-powered, tamper-proof public ledgers, and be verified, or updated in real time, with utmost security, thereby generating inconceivable improvements in efficiency, transparency and time savings.

6. Blockchain has the potential to optimize the delivery of public services, further India's fight against corruption, and create considerable value for its citizens.

- A public blockchain, like the one Bitcoin uses, records all information and transactions on the decentralized database permanently, publicly, and most importantly, securely.
- By allowing governments to track the movement of government funds, blockchain can hold state and local actors accountable for any misappropriations.

7. Blockchain can play an important role in storing individuals' data, helping conduct secure transactions, maintaining a permanent and private identity record, and turning India into a digital society.

8. Artificial intelligence, Internet of things can gain significantly from Blockchain applications.

Concerns:-

- **Telecom sector:-**
 - Blockchain is poised to disrupt typical business operations. **Unanswered questions about how private blockchain relates to regulatory frameworks, in addition to security and privacy issues, exist too.**
 - Arguably the biggest challenge, however, is identifying the optimal entry point for blockchain into the telecom industry, which may require service providers to streamline internal operations.
- **Land records:-**
 - While blockchain could ensure integrity and indisputability of future changes, it cannot resolve differences that exist today.
 - Questions like what benefit would blockchain provide to a land whose area is not captured correctly, whose ownership is contested, whose liens are not fully recorded and whose value is underreported are still vague
 - Because blockchain expert developers are scarce in the market for now, the **implementation cost might be higher.**



- Blockchain is still a (relatively) new technology and is not without its problems. For a start, there are ongoing concerns about privacy in the settlement and storage of securities blockchain providers are working hard to address.
- **Banks are also at threat with blockchain**, since more and more firms (using their IT service providers from India and elsewhere) will build systems that can create and exchange 'blocks' with one another completely legally, without ever having to use the banks as a financial intermediary.

Conclusion:-

- The potential of blockchain to bring about substantial economic transformation is the mirror image of the way the Internet revolutionised commerce, media and advertising in the previous decade. **India should effectively channel its technical human capital surplus to position itself as one of the pioneers during this upcoming wave of innovation.**

Q) Discuss the dispute and legal progress on the Monsanto's patent case? Examine Delhi HC's decision's impact on Indian agriculture? (250 words)

Reference

Financial express

Why this question

The recent decision of the Delhi HC on Monsanto's patent plea for Bt Cotton is a landmark decision whose details must be known to us. Also the impact of the decision is important to be studied.

Key demand of the question

The question expects us to incorporate the following points in our answer.

- *Discuss the details of the case highlighting the reason behind it, the judgment, the legal provisions involved etc*
- *Thereafter discuss the impact that the judgment will have on agriculture in general and seed availability in particular.*

Directive word

Discuss – Here you need to provide an in depth analysis of the case from the causes, verdict to the legal provisions involved.

Examine – When you are asked to examine, you have to probe deeper into the topic, get into details, and find out the causes or implications if any .

Structure of the answer

Introduction – *Highlight the verdict of the case and mention that it needs to be analyzed to understand the implications*

Body

- *Discuss the details of the case highlighting the reason behind it, the controversy related to higher pricing , the judgment, the legal provisions involved and the impact of the verdict on patent law in India.*
- *Highlight the impact that the verdict will have on India. Start off by pointing to the unfair patent practices that big seed companies like Monsanto utilize, but also highlight that seed technology in India needs to develop. Analyze how this verdict will impact that. Also examine the problems that it will cause for patent of India's own gm seed.*

Conclusion – *Summarize your view and discuss what the next step of the government should be.*



Background:-

- Delhi High Court ruled that agriculture biotech giant Monsanto's genetically modified cotton seeds are not patentable because India's Patents Act prohibits the patenting of plants and bio-logical matter in the long-running case between Monsanto and its licensee Nuziveedu Seeds (NSL).

Dispute and legal process on Monsanto patent case:-

- The dispute **initially arose over license and royalty of Patented seed technology BOLLGARD II**, between Monsanto and Nuziveedu seeds Company (NSL) in 2015 .
- The genesis of the current legal wrangle is a dispute between NSL, the largest hybrid seed company in the country, and Monsanto **over changes in the licensing agreement and a further reduction in trait fees**.
 - In 2015, NSL, sought a 10 per cent cut in royalties or trait fees levied by MMBL.
 - It was a demand which was joined by other seed firms which said it was impossible to pay the fee demanded by Monsanto because some states had fixed the total seed price.
- **As the stand-off deepened, Monsanto terminated its agreement with NSL.**
 - Monsanto then sued Nuziveedu Seeds and its subsidiaries for continuing to sell seeds using its patented technology despite termination of its sublicense agreement. Nuziveedu then filed a counter suit challenging Monsanto's patent.

Delhi high court decision:-

- Delhi High Court verdict said that **certain items such as seeds, plants and animals can't be patented under Indian laws**. The court rejected Monsanto's plea to stop Nuziveedu Seeds Ltd., an estranged licensee of the company, from selling Bt cotton seeds in India.
- It overturned the decision of a single-judge bench **regarding the interpretation of Section 3(j) of the Indian Patents Act, 1970, holding that transgenic plants, seeds and varieties cannot be patented.**

Impact on agriculture:-

- **Negatives:-**
 - Discourage research and development in agriculture.
 - Judgment could impact multiple litigations regarding seed patents and transgenic traits, in which the Centre is involved. It could adversely affect the Indian farmer and consumer.
- **Positives:-**
 - Delhi High Court's ruling which forbids Monsanto from stopping supplies to seed companies is a **boost to domestic seed companies** and will **curb the ability of multinationals to establish a seed monopoly**.
 - This could downsize the market for genetically modified seeds in India (in any life form) and pave the way for **more environmentally sustainable agriculture**.
 - Will help revive the native seed industry which has been undermined by the agri-MNCs and their links with public-funded agricultural institutions that never bothered to assess the impact of GM seeds on soil, animal and human health.
 - Verdict underscores the challenges faced by multinational companies in dealing with the patent laws at a time when the country of about 1.3 billion people is trying to attract foreign companies to invest in mega projects.



Q) What do you understand by Ensemble Production system. Discuss the advantages of its recent introduction in India. (250 words)

Why this question

The [Ministry of Earth Sciences \(MoES\)](#) has commissioned two very high resolution (12 km grid scale) state-of-the-art global [Ensemble Prediction Systems \(EPS\)](#) for generating operational 10-days probabilistic forecasts of [weather](#). The issue is related to GS 3 syllabus under the following heading-

Science and Technology- developments and their applications and effects in everyday life
Achievements of Indians in science & technology; indigenization of technology and developing new technology.

Key demand of the question

The question wants us to describe in detail the newly launched ensemble production system and also mention its advantages.

Directive word

Discuss- We have to write in detail about the given term/ technology and also enumerate its advantages.

Structure of the answer

Introduction– Mention the recent launch of the ensemble production system by IMD.

Body-

- Describe the term further. Take the help of the articles attached with the question to frame your answer.
- Mention the advantages of the system. e.g more accuracy and precision in forecasting, better decision making in weather forecasting, advanced data processing and assimilation etc.

Conclusion- Mention the importance of the technology for Indian farmers, agriculture and economy. Also mention its limitations to predict thunderstorms.

Background:-

- The Ministry of Earth Science (MoES) recently launched the Ensemble Prediction System (EPS) for generating more accurate and area specific forecast of extreme weather events like rains, heat wave and cold wave.

Ensemble prediction system:-

- The new Ensemble Prediction System (EPS) has been touted as best available model after such a system available in Europe.
- The new EPS system has been developed by three bodies under Ministry of Earth Sciences viz. Indian Meteorological Department (IMD), National Centre for Medium Range Weather Forecasting (NCMRWF) and Indian Institute of Tropical Meteorology.
- The most salient feature of new EPS is its high resolution for short-medium range weather forecasts.
- In its calculations, the system will use a newly procured 8 petaflops high-power computing system. The system was recently procured for Rs. 450 crore.

Advantages:-

- These new systems, according to IMD, **shall improve upon deterministic forecasts that are prone to high margins of error.**
- Under the new system, the area of spatial resolution (currently 23 km grid scale) will come down to 12 km. This **would help sending out district level warning** and forecast extreme weather events as before as five days.
- The EPS will not only enable the India Meteorological Department (IMD) to give forecast five days before, but would also **add the probability of occurrence of an extreme weather event with its level of intensity.**



- The **new ensemble will tell the probability of rainfall according to its intensity and volume**, this will be colour coded for ease of interpretation.
- **Frameworks of the new EPS are among the best weather prediction systems in the world at present** and very few forecasting centres in the world use this high resolution for short-medium range probabilistic weather forecasts.
- **The EPS will enhance the weather information** being provided by the current models by quantifying the uncertainties in the weather forecast and generate probabilistic forecasts.
- **It will greatly help the disaster management authorities** and other users in making better emergency response decisions by explicitly accounting for the uncertainty in weather forecasts.
- The **accurate weather forecasts would help farmers to damage crops** and also support administration to take disasters prevention steps beforehand.

Disadvantages :-

- This system will not be very helpful when it comes to predicting thunderstorms, which India has seen across the country recently, as these are mesoscale weather phenomena (limited to a small geography) and not well captured even with 12km grid scale.

Conclusion:-

- Advance prediction can help farmers and agriculture which is largely impacted due to weather changes. So the ensemble prediction system is the step in the right direction.

Q) What do you understand by Geospatial Intelligence. Discuss how it acts as a force multiplier for the defence and security of a country. (250 words)

[PIB](#)

[Wikipedia](#)

[Reference](#)

[Reference](#)

Why this question

GIS provides one of the most invaluable tools for defence and public organisations– information. GIS technology has become an indispensable tool to gather data and intel for purposes of analysing, modeling, planning and building to fulfil the full spectrum of government functionalities. The issue is related to GS3 syllabus under the following heading-

Science and Technology- developments and their applications and effects in everyday life.

Key demand of the question.

The question wants us to simply describe the meaning of the term, geospatial intelligence and elaborate the key principles. It then wants us to write in detail about its role in promoting the defence and security of a country.

Directive word

Discuss- we have to write in detail about the meaning, underlying principles and role played by geospatial intelligence as a force multiplier for defence and security of a country. Here we should support our answer with some examples.

Structure of the answer

Introduction- *Give a brief but a comprehensive definition of the term geospatial intelligence.*



Body–

- *Discuss the key principles underlying the geospatial intelligence. E.g seeks knowledge to achieve a decision advantage, information denial and deception (D&D), reveals how human action is constrained by the physical landscape and human perceptions of Earth etc.*
- *Discuss in points how exploitation of geointelligence and associated technologies can act as a force multiplier for the defence and security of the country. Take help of the articles attached with the question to frame your answer. Also give examples of such technologies/ techniques used/ put in place by other countries; Afghan war, Iraq war etc.*

Conclusion- *Mention the need to harness the given technologies and mention projects like the hexagon project.*

Background:-

- In the face of global situations that call for analysis of visual imagery, application of geospatial technologies and the craft of intelligence, **Geointelligence** emerges as the critical link.

Geospatial intelligence:-

- It is intelligence of both physical and man made characteristics of Earth
- Geospatial intelligence (GEOINT) is intelligence derived from the exploitation and analysis of imagery and geospatial information about features and events, with reference to space and time. This definition applies not only to products and services, but also to the process of conducting analysis.
- The use of big data, advanced geospatial analytics software and sophisticated imaging technologies from (very) high-resolution remote sensing satellites, UAVs and other sensors, enables seamless flow of information in pre-, real-time and post-combat operations
- **GEOINT is comprised of the following sub-disciplines:**
 - **Imagery Analysis**
 - The process of examining an image collected from satellites or aircraft to identify features, describe activity and interpret what is occurring at a given place on the Earth's surface.
 - **Geospatial Analysis**
 - Entails collecting and analysing information about features on the ground, their relationships to the Earth and to each other.
 - **Geospatial Information and Services**
 - A combination of the precise location information and associated attributes of natural and man-made features. This combination conveys the 'what' and 'where' of a feature on the Earth's surface and provides the foundation for a wide range of information to be integrated and displayed.

Defence and national security:-

- Geospatial Intelligence is a critical foundation for many aspects of defense and internal security, offers the capability of monitoring, predicting and countering threats, while helping strategize and support various field operations.
- **Tracking people:-**
 - It helps in getting geo tagged tweets ,terrain images from satellites, GPS phone tracking and Drone surveillance
 - Locate terrorist groups through multiple data sources
 - Helped locate Laden in 2011 when his compound was raided.
 - **Use of advanced sensor technology and multiple types of geospatial data to help visualize events.**
 - For instance, intelligence applied to a map of terrorist hideouts, data mined from geo-tagged tweets, satellite image of the terrain, drone surveillance and GPS tracking of cell phone devices in use; makes possible real-time mapping and analysis of terrorist movements across space and time



- **Saving lives in war zones:-**
 - Geospatial intelligence can map out rugged terrain, possible escape routes and best aid airdrop points.
 - When thousands of people fleeing ISIL got trapped in Iraq several geospatial maps were combined to analyze the situation and save lives
 - Geospatial intelligence (GEOINT) has been an indispensable tool for defense agencies across the world for a long time now. **The recent conflicts in Iraq and Afghanistan have further demonstrated that geospatial inputs would be at the core of all future wars.**
- **Military support:-**
 - Infrastructure system planning for bases and operations
 - Target vetting
 - Navigation safety on land, air and sea
 - It provides **logistics support for military operations**, disaster response, civic emergencies, and so on.
 - **And with world events tilting towards international terrorism**, there is a great need amongst military agencies for detailed knowledge of the areas of conflict to improve their process for assessment, response, and decision-making.
 - **Even nations that do not encourage** war understand the need of keeping their soldiers informed about the location of friends and enemies alike.
- **Cyber security**
 - It can assist in finding the physical locations of hackers and others who launch cyber attacks
 - Logical mapping shows how data and cyber assets connect regardless of geographic location
 - As cyber threats originate in a physical space geospatial intelligence helps find them
 - GEOINT mapping of cyber attacks even after they occur can provide information on the culprits, what they want and what another attack might be
 - Threats to servers and their physical storage locations can be thwarted by :-
 - Server operations can even be diverted to another location in the event of a cyber threat
 - Other physical securities can be added such as additional security guards and more restricted access
- **Natural resource management:-**
 - It helps identify and manage natural resources
 - Growing amounts of GEOINT together with advances in energy consuming products could vastly reduce resource waste worldwide
- **Disaster response and management:-**
 - It helps first responder and government in times of disaster. The ability to **support first responders and military personnel** with actionable insights and real time data has proved to be invaluable.
 - Best locations for bringing in aid are pinpointed
 - To organize humanitarian efforts after crises
 - In **west African Ebola crisis** GEOINT described key elements for fighting the epidemic
- It facilitates **multi-source information sharing and integration across agencies and organizations** by providing a common framework on which other information is based.
- It has the **ability to map human movements**, across time, space and terrain for tactical planning
- It is a **powerful tool for civic planning**, humanitarian missions, industrial surveillance, precision war, conflict resolution, **national security**



- Not only supports forces in their strategic decisions and operations but also for **countering asymmetric threats**.
- **Provide insights to help avert dangers**, counter conflicts, predict opportunities or adapt to shifting conditions.
- **Intelligence analysis** using data from other INTs (SIGINT, HUMINT, MASINT, IMINT, OSINT) for additional context to the problem under consideration.
- It is playing a **crucial role to exploit the capability and preparedness of a nation to respond to surprise attack or otherwise**.
- It is **used to predict future problems**, bring visibility to hotspots, and to develop what if scenarios.
- As threats to national security become more unpredictable, **geospatial intelligence has an even more important role to play in the future of safety, security and defence**.

Q) Critically analyze the need to promote the emerging slew of shared mobility options and app-based ride providers in India. (250 words)

[The hindu](#)

[Economic times](#)

[Reference](#)

Why this question

Even though the governments, including the central and the state governments have tried to increase and improve the public transport system, the efforts have not been successful in weaning people away from private transport and traffic woes continue. The issue is related to GS 3 syllabus under the following heading-

Science and Technology- developments and their applications and effects in everyday life.

Key demand of the question

The question wants us to dig deep into the emerging shared mobility options and app-based ride providers and analyze the advantages offered by them and problems faced by them.

Directive word

Critically analyze- We have to scrutinize and look into the details of the issue. We have to identify the key aspects of the question, have a discussion on each one of them and form a personal opinion on the issue in the end.

Structure of the answer

Introduction– *Mention the increase in number of motor vehicles in India from 5.4 million in 1981 to 210 million in 2015. Also mention the emerging shared mobility options and app-based ride providers and give some examples like Zoom car etc.*

Body-

- *Discuss briefly the meaning of shared mobility.*
- *Discuss its advantages vis a vis public transport system. E.g. it provides end-to-end mobility, more customized services, complements well with self-driving technology, on-demand availability, the flexibility to choose vehicle type as per need and freedom from parking hassles. It also cuts down costs related to car ownership, such as maintenance, service and insurance etc.*
- *Discuss the problems faced by such shared mobility services e.g they don't fall within the ambit of stage carriages or contact carriages, regulatory issues related to pricing etc.*



Conclusion- *mention how —electrification, shared mobility, connectivity and autonomous driving— will drive the future of mobility and transportation and form a balanced, fair and a concise opinion on the issue.*

Background:-

- India is the world's fastest growing oil consumer. This consumption and dependence on oil is unsustainable. As India strives to break free of this reliance on oil, different mobility options, which are also green and sustainable, become more attractive.

Shared mobility:-

- Ride-sharing, or shared mobility, is **defined** as an “innovative transportation strategy that enables users to gain short-term access to transportation modes on an as-needed basis.”
- Shared mobility, which includes all forms of shared transportation such as public transport, car pools and radio taxis, is an increasingly attractive and cost-efficient mobility option worldwide.
- India offers all the right ingredients to be one of the largest shared mobility markets in the world as it has large population clusters, a young demographic that is well connected to the internet and rising real incomes.

Why India needs to promote emerging slew of shared mobility options and app based ride providers:-

- Sustainable mobility** is the need of the hour as India strives for self-sufficiency in oil and battles vehicular pollution on its streets. Shared mobility, gas-powered vehicles and electric vehicles (EVs) are all potential solutions in India's quest for sustainable mobility.
- Shared transport, such as app-based shared cabs, help **the environment by reducing the number of vehicles adding to carbon emissions on the streets.**
- Ridesharing apps, can help avoid some of the pitfalls of today's transportation system like
 - Public intercity transportation infrastructure (including trains and local buses) in India have been slow to ramp-up
 - Traffic congestion is an unfortunate and inevitable feature of life in large cities across the nation.
- Shared Mobility Principles for Liveable Cities aim to work towards prioritising people over vehicle, support the shared and efficient use of vehicles, lanes, curbs, and land, engage with stakeholders, promote equity, lead the transition towards a zero-emission future and renewable energy.
- Shared mobility could remain a **convenient and economical alternative to taxis and other public transport.**
- These new players have read the market well and offer the conveniences that commuters are looking for, from door-to-door services to **on-demand availability.**
- They allow commuters to travel independently or share the ride with other passengers to **save costs.**
- There are a **variety of vehicle types to suit individual trips** and passenger preferences, ranging from two-wheelers and three-wheelers to cars of different sizes and mini-buses.
- Ridesharing will also be a critical part of our longer term transportation future: self-driving vehicles. Research has shown that self-driving technology could drastically improve mobility, while also improving road safety.
- Car-sharing provides a solution to individuals and households who normally would not have been able to afford either owning a car or using a taxi service as their primary mode of transport.

Criticism:-

- However, ride sharing or cab pooling was estimated to be less than 0.5 percent of Indian market primarily due to three factors.
- Regulatory limitations affect the profitability of the business model such as the absence of a clear policy for ride sharing charges and tax implications for private vehicles operating as shared vehicles, and the lack of more incentives such as parking privileges and tax breaks.
 - App-based mini-buses do not find favour with regulators. They are neither stage carriages nor contract carriages under the Motor Vehicles Act which makes it difficult for them to secure permits.



- Many customers avoid cab sharing due to safety concerns about travelling with a stranger. This links with the third factor the Indian mindset, which is only gradually growing accustomed to ride-sharing as a mode of transport.
- Trust, in particular, has been one of the most concerning issues for both riders and drivers.
- **Female** drivers and riders have been on the receiving end of the abuse, bringing greater societal issues into the ride-sharing picture.

Way forward:-

- To safeguard investments in public transport and to ensure that app-based services don't compete with them on price, a floor price could be set for these services. This would mean that these services can charge more than a certain base price but not less.
- The regulation must, therefore, consider embracing technology-based services for the larger benefit.
 - Regulators must consult CCI to ensure that policies on licensing, vehicle standards and pricing are not anti-competitive. They must not act as a barrier to entry for drivers looking to join taxi aggregators.
- The government, along with other stakeholders, must first agree on general principles to govern the ride-sharing industry before adopting any regulation
- It is important for entrepreneurs to continue pushing the boundaries in creating new solutions to shape the future of transportation

Q) Moving forward on the path to electrifying mobility in India is a complex issue and requires many precautions to be taken. Critically Analyze. (250 words)

Livemint

Why this question

The question is related to GS-3 syllabus under the following heading –

Science and Technology- developments and their applications and effects in everyday life.

Conservation, environmental pollution and degradation, environmental impact assessment.

Key demand of the question

The question wants us to look deeply into the issue of the goals and plans to increase electrical mobility in India. We have to look into all the aspects of the issue and discuss what precautions should be taken before moving forward.

Directive word

Critically analyse- we have to dig deep into the issue and identify, briefly discuss the key aspects of the question. We have to bring out the need to take certain precautions before deciding and pursuing our goals in relation to increase electrical mobility in India.

Structure of the answer

Introduction– *mention the recent targets as indicated by NITI Aayog i.e 40% of personal vehicles and public transportation in the country should go completely electric by 2030.*

Body-

- *Discuss why precautions need to be taken before pursuing such a target. E.g lack of infrastructure, the dominance of public transport as a source of air pollution, a high number of two-wheelers in the country, high cost of EVs etc.*
- *Discuss in points what precautions should be taken.*
- *e.g prioritize public transport and two-wheelers, need to provide some subsidy, adopting swap battery model instead of charging model which is more suited to Indian conditions, demonstrate*



and learn from the experience in selected smart cities and then increase the ambit of the programme etc.

Conclusion– *mention that a step-by-step approach is required as the ecosystem for electric vehicles develops gradually, alternative models are pursued, and learnings from experience accrue. You can also better make your own conclusion based on your discussion and arguments.*

Background:-

- Electric vehicles (EVs) are growing in popularity and certainly in mind space. They are cleaner and more efficient, easy to maintain and there is an advantage of regenerative braking. On the whole it is a package to fight against climate change and global warming as green house gas emissions are reduced.
- Recent targets by NITI Aayog indicate 40% of personal vehicles and public transportation in the country should go completely electric by 2030.

Government Initiatives:-

- The government has asked auto companies to start manufacturing electric vehicles in India, and is also studying global markets to come up with a policy surrounding electric mobility and storage.
- The Government started **Faster Adoption and Manufacturing of Hybrid and Electric vehicles (FAME)** scheme which provides incentives for purchasing electric vehicle.
- Government is releasing tenders to increase charging infrastructure in the country. India will get its very first electric vehicle charging station in Nagpur.
- Karnataka state approved Electric Vehicle and Energy Storage Policy 2017.
- BS (Bharat Stage) protocol for Charging was formed to build the framework for future charging stations.
- **Boost to electric vehicles:**
- India proposed to liberalize the permit system for electric vehicles to promote alternative fuels. It suggested raising the tax on diesel vehicles by 2% while lowering the tax on electric vehicles.

Problems with current model and why precautions need to be taken:-

- Most worries hinge on **battery costs and manufacturer readiness**. Also at current the electric vehicles take longer time to charge than conventional vehicles.
- **EV battery production:**
 - India does not produce lithium-ion (Li-ion) batteries currently, and companies making battery packs are dependent exclusively on imports from China.
 - This is a cost-saving strategy as setting up a cell manufacturing unit in India would be expensive.
 - But, accelerating EV use in India **should be linked to the “Make in India”** goal and domestic battery production.
- A more India-specific concern will be that of **the electricity grid** as there are doubts when it can successfully handle the demand.
- India needs to focus on ecosystem EV because the **present system does not help environment as most power comes from coal-fired power**
- **Will use solar photovoltaics (PV) to charge EVs.** This means that Renewable energy may at best contribute some fraction of energy at different times but with personal vehicles and public transport mostly charged at night solar energy advantage as an alternative is constrained.
- **International experiences:-**
 - There have been some concerns about previous experiences in China and Israel. But these models were meant for personal cars and were costly. Besides, lack of marketing, proper execution and mismanagement led to the failure of the promising EV start-up in Israel Better Place. The subsidy structure also became distorted, favouring large batteries.



- **Policies have to be developed to facilitate the indigenization of battery assembly, and manufacture of EVs and their basic components.** Currently, there are distortions with the goods and services tax (GST). The GST rate on batteries is 28%, while it is 12% for electric vehicles.
- **Coordination among various stakeholders:**
 - EVs, unlike ICE vehicles, involve several actors at the national, State and city levels, respectively
 - Multiple ministries such as Road Transport and Highways, Housing and Urban Affairs, Heavy Industries, Power, New and Renewable Energy, External Affairs as well as national institutes such as NITI Aayog should work together.
 - State and city-level players need to be involved so as to address several technical and infrastructural needs.
- **Charging infrastructure:**
 - Charging infrastructure for electric vehicles in India has not been fully developed yet.
 - EV charging is more than just using electricity. **It involves exchange of information** requiring a communication protocol.
 - The absence of a standard global infrastructure is a major deterrent for EV penetration in India, as creating infrastructure can be cost-intensive.
 - The government needs to select or develop appropriate and safe charging technology that avoids multiplicity and reduces the cost of infrastructure.

What more needs to be done?

- **EVs and the grid can have enormous synergy.**
 - Not only can EVs charge whenever there is “surplus” power, they have a battery useful for absorbing variable renewable energy. **They can even offer backup power for the grid.**
- Time-of-day pricing (**cheap charging when power is surplus**) is missing today. Without this, India cannot have signalling to purposely make demand vary to match supply conditions. Such responsiveness is a hallmark of the “future grid”
- EVs can and should use Renewable energy as much as possible as it helps in cleaning the environment.
- India could compensate cleaner vehicles through reduced registration charges, or even aim for mandating EVs for taxis and selected (urban) public transport vehicles.
- There are other ways to spur EVs, **including dedicated charging spots**, and discounted or free parking.
- The long-run goal isn’t **just to make vehicles electric but to reduce personal driving**. This means urban redesign for walking/biking, more shared services, and more and better public transport
- The government mainly needs to create the right frameworks and help overcome “network effect” problems, covering both the grid and charging infrastructure.
- **To meet India’s demands for batteries amid a global surge in electric vehicle demand, the entire mineral supply chain needs to be overhauled and expanded**
 - In order to avoid a scenario like the one that played during the oil crises of the 1970s it is imperative that India secure mineral supplies for its domestic industry by acquisition of overseas assets such as mineral reserves and the associated production.
 - India has long-term trade relations with lithium-producing countries in Latin America through preferential trade agreements (PTAs).
 - India needs to formulate policies incentivising domestic public and private mining companies to invest in overseas lithium mining assets.
 - Reducing the battery size and adopting “swappable” battery technology are other alternatives
- **India does need to have a low-emission vehicle policy**, one that surrounds alternative energy sources such as bio-gas and bio-diesel.



- Because **hybrids are a mesh of existing and future technologies** and do not require the establishment of charging infrastructure, although popularising plug-in hybrids that can be charged both from their own engines and the grid, will actually help in the gradual seeding of such infrastructure before a shift to electric vehicles.
- **Focus on wireless ranging** as it allows for significantly smaller batteries or the ability to travel longer distances with a larger battery.
- Efficiency in terms of total cost per kilometre, not capital costs or larger batteries, should be incentivized
- Ideally, the best course would be to select five smart cities with the objective of fully electrifying their public transportation as well as 50% of their two-wheelers by 2025.
- Figuring out the best mode forward:
 - Different countries have different approaches to increase the EV penetration.
 - For example China has focussed on **Electric buses** as catalyst for EV penetration.
 - On the other hand, Netherlands has captured the EV market using a simple yet well-crafted strategy of creating **charging infrastructure** and encouraging investment in charging technology. It's a major exporter of this technology too.
- Hence, the impact on employment in the wake of shift to Electric vehicles needs to be thoroughly studied. Bold initiatives and robust investments in technological research are required to turn its EV dream into reality.

Conclusion:-

- When India is focusing on reaching the targets on the Paris agreement and striving for cleaner environment the focus on electrical vehicles is the right direction.

Topic: Awareness in the fields of IT, Space, Computers, robotics, nanotechnology, biotechnology and issues relating to intellectual property rights.

Q) Keeping the interest of the citizens in mind, it is important to firm up a blueprint for price regulation of patented medicines in India. Critically analyze. (250 words)

EPW

Why this question

Pricing of patented medicines is a hotly debated topic in India. The unaffordable prices of patented medicines compromise equitable access to them and threaten the financial sustainability not only of patients but even that of the public health system. The question is related to GS 3 syllabus under the following heading-

Awareness in the fields of IT, Space, Computers, robotics, nanotechnology, biotechnology and issues relating to intellectual property rights.

Key demand of the question

The question wants us to dig deep into the drug pricing regime in India and bring out the need and implications of pricing of patented pharmaceuticals drugs in India.

Directive word

Critically analyse- We have to identify the main aspects of the question and frame our answer accordingly. Here we have to brainstorm on the pros and cons of regulated pricing of patented medicines in India while discussing the need and implications for such a step. We have to present our personal opinion on the issue.

Structure of the answer

Introduction– *mention the National List of Essential Medicines, inserted as Schedule-I of the DPCO, which regulates (caps) the prices of essential medicines in India, and derives its powers from the essential commodities act, 1955.*



Body-

- *Bring out the need for/ pros of regulating the price of patented medicines in India (poor affordability of patients, high disease burden, exorbitant prices of patented drugs, forcing to enter into voluntary licensing, forcing to gain from economies of scale etc.). Give examples of drugs which have entered into controversies/ litigation on account of their high prices (e.g Erlotinib, Sofosbuvir, Imatinib etc).*
- *Discuss the cons of regulating the price of patented medicines in India.
e.g high development costs of new drugs which need to be recovered, stifling of innovation, the risk of drastically reducing the supply of patented drugs etc.*
- *Mention India's compliance to TRIPS agreement even after invoking the provision of compulsory licensing and denying evergreening of patents. Also, mention the sustainable development goals which affirm the right of developing countries to utilise the TRIPS agreement flexibilities to ensure access to new medicines for all.*

Conclusion- *Based on your convictions and the above-held discussion, form a fair and balanced opinion on the given issue*

Background :-

- Providing medicines to the public at affordable prices is a key goal driving the public health policy design in many countries. Medicines with valid patents generally enjoy exemption from price regulation in most countries.

Pricing of Medicines in India :-

- The National Pharmaceutical Pricing Authority (NPPA) under the Department of Pharmaceuticals is tasked with the responsibility of fixing the prices of medicines in India.
- The NPPA implements the Drugs (Prices Control) Order (DPCO), 2013 which aims at making available essential and life-saving medicines to all at affordable prices through price control.
- The DPCO, 2013 draws its powers from the Essential Commodities Act, 1955 (EC Act). The DPCO, 2013 follows a market-based pricing methodology for fixing the ceiling prices of medicines.
- The key principle underlying the market-based pricing methodology of the DPCO, 2013 is essentiality. This principle is satisfied by considering the list of medicines included in the National List of Essential Medicines (NLEM) declared by the Ministry of Health and Family Welfare, and revised from time to time.
- The Drugs (Prices Control) Order lays down the rules for regulation of prices of medicines through a National List of Essential Medicines, inserted as Schedule-I of the
- While any medicine that is included in Schedule-I automatically qualifies for price regulation, the DPCO exempts patented medicines that have been developed indigenously from price control for a period of five years

Why there is a need to regulation price of patented medicines in India:-

- Pharmaceutical patents grant protection to the patentee for the duration of the patent term. The patentees enjoy the liberty to determine the prices of medicines, which is time-limited to the period of monopoly, but **unaffordable to the public**. It puts a **huge burden on the public's purchasing power** in accessing these patented medicines.
- **Public is put to much distress as most of these medicines generally do not find any place in the essential medicine list**. The unsustainable high price of new anticancer medicines has become a major area of concern as cancer has become a money-maker for pharmaceutical companies.
- Unaffordability of the medicine leaves the patient with no option but to avoid purchasing the costly medicine which would have given them an extended lease of life, rather than get caught in a **veritable debt trap**.
- Some researchers, having analysed the prices of imported patented medicines to India, have observed that, **while no real technology transfer has happened, higher prices are levied on the Indian consumers**.
- The unaffordable prices of patented medicines **compromise equitable access to them and threaten the financial sustainability not only of patients, but even that of the public health system**



- Medicines that have a patent tag are those which are required by patients for specialised treatments, most often when the normal or first- and second-line treatments have failed. It, therefore, becomes **important that new-generation medicines with better potential for treatment or cure become available at affordable prices.**
- **Without price regulation market's focus would only be to recover the fixed costs of the product from the sale of the products,** during the validity period of the patent, so as to recoup the investment in R&D for discovery of the product.
- **There are no intrinsic checks and balances in the market when** a patented medicine is introduced, as there is no competition from any rival pharmaceutical company for market space for the same product.
- **There is no express provision either in the WTO or the TRIPS agreement** that explicitly prohibits price regulation of patented medicines.
- In a country where very few people have health insurance, 70% of Indians pay for healthcare expenses out of their own pockets. In this scenario there is a need to regulate prices of patented medicines.
- Currently, only 5% of medicines used in India are said to be patent-protected. **India has over three million cancer patients,** which means one in every 13 of the world's cancer patients is Indian.

Cons of Price regulation of patented medicines in India :-

- The patent regime and price protection through a legally validated high price for the medicine during the currency of the patent provide the **patentee with a legitimate mechanism to get returns on the costs incurred in innovation and research .**
- Patent protection, while incentivising the time and capital invested by the innovator, **also serves to put in public domain the knowledge thus gained at the end of the patent period.**
- **India is expanding this policy beyond expensive cancer drugs.**
 - Indian Supreme Court refused to prevent an Indian generic manufacturer, Glenmark Pharmaceuticals, from manufacturing and selling Merck's diabetes drug, Januvia, in India.
 - While it is an important drug, Januvia does not carry an expensive price tag.
- Indian policies can signal **that intellectual property is tenuous in this country and will be granted only in those cases where it can benefit India.**

Conclusion:-

- Price regulation of patented medicines in some form would be a win-win solution for both, patients and the pharmaceutical industry.

Q) What do you understand by space debris. Also, discuss some of the technologies that could be employed in future, to tackle the problem. (250 words)

[Wikipedia](#)

[Reference](#)

[Reference](#)

Why this question

Scientists and researchers have been warning us time and again about the dangers posed by the space debris. Countries like US, Japan and Russia have shown their intent to tackle the problem. Besides, recently the RemoveDEBRIS satellite was launched, to test – for the first time – new technology aimed at capturing and deorbiting space junk. The issue is related to GS-3 syllabus under the following heading

Awareness in the fields of IT, Space, Computers, robotics, nanotechnology, biotechnology and issues relating to intellectual property rights.



Key demand of the question

The question wants us to express our knowledge of the meaning of space debris, their sources, what are the dangers posed by them and what are the technology options available to tackle the issue.

Directive word

Discuss- we have to write in detail about all the key demands of the question- our understanding of the term and how can the issue be resolved.

Structure of the answer

Introduction- Give a brief definition of space debris and demarcate between natural and artificial debris.

Body–

- *Enlist the sources of space debris- e.g Dead spacecraft, Lost equipment, Boosters, Weapons etc.*
- *Briefly discuss the threats posed by them. E.g to space-crafts, International Space Station, Kessler's syndrome, collision with earth etc.*
- *Discuss in points all the relevant technologies. E.g ElectroDynamic Debris Eliminator; Solar sails; Space Debris Elimination (SpaDE) system; Laser Broom; Discuss each technology briefly. Also add, ending or sharply reducing the number of breakups of spacecraft and rocket bodies and, to a lesser extent, by reducing the amount of mission-related debris released in spacecraft deployment and operations; Deorbiting or accelerating the orbital decay of spacecraft and rocket bodies at the end of their functional lifetimes etc.*

Conclusion- *Mention that most of these technologies have not been successfully tested and launch of RemoveDEBRIS will significantly reduce the knowledge gap.*

Background:-

- Space debris has become a pressing issue, with objects in orbit flying out of control, posing a risk to satellites and to astronauts. The drive to keep space debris at bay is growing as more satellites are launched.

Space debris:-

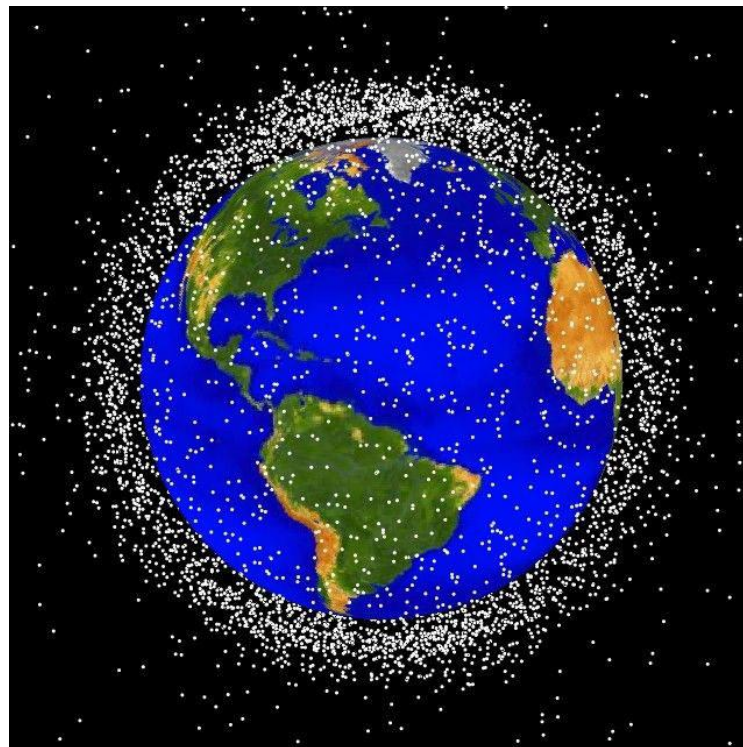
- **Space debris** is a term for the mass of defunct, artificially created objects in space, most notably in Earth orbit, such as old satellites and spent rocket stages. It includes the fragments from their disintegration, erosion and collisions.
- Sources of space debris are dead spacecrafts, lost equipment, boosters, weapons etc.
- Threats:-
 - Space junk is a threat to active satellites, unmanned spacecrafts and spaceships.
 - International space station:-
 - Although the ISS uses Whipple shielding to protect itself from minor debris, portions (notably its solar panels) cannot be protected easily.
 - There is also the risk, **known as the Kessler Syndrome or Kessler Effect**, where one piece of debris breaks off and hits another so that it becomes a cascade, which could end up polluting an entire orbit for satellites.
 - Earth:-
 - Although most debris burns up in the atmosphere, larger objects can reach the ground intact. According to NASA, an average of one cataloged piece of debris has fallen back to Earth each day for the past 50 years

Technologies that can tackle the problem in future are:-

- **Moving an object out of the way by altering its orbit is one method of diverting a potential crash**, but the sheer amount of debris requires constant observation and prediction – by any means necessary.
- **NASA's Space Debris Sensor** orbits the Earth on the International Space Station.



- The sensor was attached to the outside of the space station's European Columbus module in December 2017.
- It will detect millimetre-sized pieces of debris for at least two years, providing information on whatever hits it such as size, density, velocity, orbit and will determine whether the impacting object is from space or a man-made piece of space debris.
- **REMOVEdebris**, satellite **contain two cubesats** that will release simulated space debris so that it can then demonstrate several ways of retrieving them.
- Right now engineers **are using model satellites and robot arms to understand how a spacecraft would approach an out-of-control satellite**, maneuver itself around it, and grab hold of it.
- **Astroscale plans to launch in 2018**
- **Deorbit's flight is scheduled for 2023 or 2024:-**
 - The next stage using technologies on uncontrolled pieces of debris will be more complex and European space agency is proposing a mission called e.deorbit to its member states at the end of 2019.
 - deorbit will demonstrate that scientists can remove an uncontrolled object safely from orbit
 - There are two emerging technologies being developed under what's known as the e.Deorbit mission to grasp the wayward space junk, or to catch it.
 - Another approach being studied within the e.Deorbit project involves using nets flung into space to capture big lumps of space junk.



- Scientists need to start removing the most volatile and biggest pieces from the most congested orbits. A number of companies, such as Astroscale and Saber Astronautics, are looking at this very complicated and technical solution already. **The idea is essentially to grab a piece of debris with a special satellite and de-orbit both of them, in the process burning up both objects.**
- **Other technologies include moving objects with a powerful laser beam.** It is important to start doing that soon current scientific estimates predict that without active debris removal, certain orbits will become unusable over the coming decades.
- There is a need to ensure the long-term accessibility of orbits and to adjust current behaviour in space in order to minimize the creation of new debris. People need to be more careful with existing operational satellites and new missions.



Way forward:-

- The issues constraining the process of tackling space debris are financing and international cooperation. The question of who pays for these 'garbage collection' missions is also a tricky one. Perhaps even trickier, is negotiating the international diplomatic space and persuading, for example Russia, that their old military satellite needs to be de-orbited by a technology company. All these issues need resolution but countries need to act immediately to avoid any huge catastrophe due to inaction.

Topic: Conservation, environmental pollution and degradation, environmental impact assessment

Q) Discuss the importance of biofuels for India? Critically examine whether the national policy on biofuels will help India unlock its biofuel potential? (250 words)

[The hindu](#)

[Economic times](#)

[Livemint](#)

[pib](#)

Why this question

The question is important as the cabinet has a fortnight back approved the national policy on biofuels.

Key demand of the question

Following points are to be incorporated in your answer

- *The ways in which biofuels can resolve several of India's challenges*
- *The main points of the national policy on biofuels and how it will help India unlock its biofuel potential. Also point out its shortcomings*

Directive word

Discuss – highlight the key ways in which biofuels are beneficial for India

Critically examine – When you are asked to examine, you have to probe deeper into the topic, get into details, and find out the causes or implications if any. When 'critically' is suffixed or prefixed to a directive, all you need to do is look at the good and bad of something and give a fair judgement.

Structure of the answer

Introduction – *mention that cabinet has recently approved the national policy on biofuels.*

Body

Highlight the ways in which biofuel is advantageous for the country

Discuss the main provisions of the policy

Examine its pros and cons in helping India unlock its biofuel potential. Discuss under heads like financing, supply chain, raw materials etc

Conclusion – *Present your view and highlight the importance of assessing technical and financial feasibility as well as focus on implementation.*

Background:-

- The Union Cabinet has approved National Policy on Biofuels – 2018 in order to promote biofuels in the country.

Importance of biofuels to India:-

- Biofuels in India are of strategic importance as it augers well with the ongoing initiatives of the Government such as Make in India, Swachh Bharat Abhiyan, Skill Development and offers great opportunity to integrate with the ambitious targets of doubling of Farmers Income, Import Reduction, Employment Generation, Waste to Wealth Creation.



- Current problem of the pollution is plaguing the entire north Indian plains. The short-term solution for this issue exists in the **quick and scaled-out expansion of biofuel-powered public transport across the country.**
- This **will lead to a huge reduction in stubble burning** because of an economic incentive available to remove and give the crop waste to biofuel plants.
- **Economic:-**
 - Energy generated from biofuels is equivalent to 340 million barrels of oil or over \$22 billion. Considering that in the first quarter India had a current account deficit of \$14.3 billion, India could wipe out almost a third of our current account deficit.
- **Employment:-**
 - The increase in ethanol production alone has the potential to create over 700,000 jobs when targeting only the base potential.
 - States with a combination of high agricultural activity and large fuel consumption like Maharashtra, Punjab and Uttar Pradesh would be the best positioned to exploit this opportunity.

National biofuel policy :-

- **Categories of biofuels:**
 - The policy creates two categories of biofuels: basic and advanced. Basic biofuels include first generation bioethanol.
 - Advanced biofuels include second generation ethanol, municipal solid waste, third generation biofuels, bio-CNG etc
- **Raw materials:**
 - The **policy expands the scope of raw material for ethanol production by allowing the use of certain items that are unfit for human consumption.** These include: (i) sugarcane juice, (ii) materials containing sugar such as sugar beet, (iii) materials containing starch such as corn, cassava, and (iv) damaged food grains like wheat, broken rice, and rotten potatoes.
 - Farmers are at a risk of not getting appropriate price for their produce during the surplus production phase. Taking this into account ,it also allows the use of surplus food grains for production of ethanol for blending with petrol, with the approval of the National Biofuel Coordination Committee.
 - This will likely reduce the cost of producing biofuels and improve affordability for consumers, particularly during times when oil prices reach discomforting levels.
- **Financial incentives:**
 - The policy indicates a viability gap funding scheme of Rs 5,000 crore in six years for second generation ethanol bio refineries. Further, advanced biofuels will also get additional tax incentives, and higher purchase price as compared to basic biofuels.
- Roles and responsibilities of all the concerned Ministries/Departments with respect to biofuels has been captured in the Policy document to synergise efforts.
- The new policy will also benefit farmers, who will be able to sell various types of agricultural waste to industry at remunerative prices

Expected benefits:-

- **Reduce Import Dependency:**
 - The ethanol supply year 2017-18 is likely to see a supply of around 150 crore litres of ethanol which will result in savings of over Rs.4000 crore of forex.
- **Cleaner Environment:**
 - One crore lit of E-10 saves around 20,000 ton of CO2 emissions.



- For the ethanol supply year 2017-18, there will be lesser emissions of CO₂ to the tune of 30 lakh ton. By reducing crop burning & conversion of agricultural residues/wastes to biofuels there will be further reduction in Green House Gas emissions.
- **Health benefits:**
 - Used Cooking Oil is a potential feedstock for biodiesel and its use for making biodiesel will prevent diversion of used cooking oil in the food industry.
- **Municipal solid waste Management:**
 - It is estimated that, annually 62 MMT of Municipal Solid Waste gets generated in India. There are technologies available which can convert waste/plastic, MSW to drop in fuels. One ton of such waste has the potential to provide around 20% of drop in fuels.
- **Infrastructural Investment in Rural Areas:**
 - At present Oil Marketing Companies are in the process of setting up twelve 2G bio refineries with an investment of around Rs.10,000 crore. Further addition of 2G bio refineries across the Country will spur infrastructural investment in the rural areas.
- **Employment Generation:**
 - One 100klpd 2G bio refinery can contribute 1200 jobs in Plant Operations, Village Level Entrepreneurs and Supply Chain Management.
- **Additional Income to Farmers:**
 - By adopting 2G technologies, agricultural residues/waste which otherwise are burnt by the farmers can be converted to ethanol and can fetch a price for these waste if a market is developed for the same.
 - Also, farmers are at a risk of not getting appropriate price for their produce during the surplus production phase. Thus conversion of surplus grains and agricultural biomass can help in price stabilization

Concerns with the policy:-

- **Supply-chain infrastructure that is required to deliver biofuels to the final consumer remains inadequate.**
- To convert India's existing biofuel potential into reality, **huge investments need to be made in creating bio refinery capacity. However, this is easier said than done.** While state-owned oil marketing companies are in the process of setting up 12 bio-refineries, this can only be a base to build on.
- On the ground, **private sector investment in this space has been hampered by financial constraints and lack of cohesive support from the Central to the local level.**
- **Efficiently transporting low value biomass to the refineries is another challenge.**

Way forward:-

- The Centre should ensure that it actively involves the private sector in this exercise especially for functions like procurement, storage and distribution.
- Centre should steer clear of micromanaging the supply chain but, instead, **help in land acquisition for the bio-refineries and working with the stakeholders to fix a reasonable price for the end product.**
- The policy should be followed up with coordinated action at the user end to ensure that the larger goal of the policy of cleaning up the air, reducing the carbon footprint and shift to more sustainable renewable fuels is not lost sight of.

Conclusion:

- From encouraging the use of biofuels in public transport to ensuring that civic bodies actually realise the potential of municipal waste and sewage the policy needs to be implemented in mission mode on a nationwide basis.



Q) What are Bioplastics? Briefly explain the different variants of Bioplastics being used and promoted? Critically examine the impact of Bioplastics on the environment? (250 words)

[Reference](#)

[Reference](#)

Why this question

Plastics are being talked about again, thanks to the United Nations Environment Programme's #beatplasticpollution campaign, backed in turn by a growing chorus worldwide against the material in its many avatars. Bioplastics at this stage are being proposed as a safe alternative to plastics, and examining whether this assertion is true is critical to how we deal with plastics in the future. Hence this question.

Key demand of the question

The question is fairly straightforward in its demands. We just need to mention some alternatives to the use of Bioplastics if we are taking a stand that using Bioplastics is not good for the environment.

Directive word

Critically examine – When you are asked to examine, you have to probe deeper into the topic, get into details, and find out the causes or implications if any. When 'critically' is suffixed or prefixed to a directive, all you need to do is look at the good and bad of something and give a fair judgement.

Structure of the answer

Introduction – *Highlight the anti plastic campaign in India which is gaining steam as world environment day approaches. Mention that plastics are one of the most stubborn pollutants and thus several alternatives have come up.*

Body

- *Define Bioplastics and also discuss the features of different forms of Bioplastics being used and promoted*
- *Thereafter, examine whether Bioplastics provide an environmentally safer alternative to plastics or whether they lead to several other issues which exacerbate the problem*
- *Discuss some of the alternatives to the use of Bioplastics like composting, behavioural changes etc*

Conclusion – *present your view on whether or not the use of Bioplastics should be promoted.*

Bioplastics:-

- Bio-based plastics means **they are developed from biomass (plants) such as corn, sugarcane, vegetable oil or wood pulp**. Biodegradable plastics are those which possess the characteristics of biodegradability and composability.
- They can be converted into natural substances like water, carbon dioxide, and compost by the action of micro-organisms in the environment.
- Bioplastics are biodegradable materials that come from renewable sources and can be used to reduce the problem of contaminating plastic waste that is suffocating the planet and contaminating the environment.
- As an alternative to plastic, the use of bioplastics is being promoted, consisting in obtaining natural polymers from agricultural, cellulose or potato and corn starch waste.

Types of Bioplastics

- Bioplastics can be prepared from a variety of materials like starch, sugar, cellulose etc.
- **Cellulose-based plastics** are made from wood pulp and they are used for making film based materials such as wrappers.



- **Thermoplastics** are starch based plastics. They are used for production of drug capsules as starch has ability to absorb moisture.
- These represent the most widely used bioplastic, constituting about 50 percent of the bioplastics market
- **Polylactic Acid (PLA)** is made from the fermentation of starch from crops. It is used for preparing computer and mobile phone casings, cups, bottles and other packaging.
- **Polyhydroxybutyrate (PHB)** is used for making bank notes and car parts etc.
- **Polyamide 11 (PA 11)** prepared from vegetable oils is used for making oil and gas flexible pipes, and electrical anti-termite cable sheathing etc.
- **Photo-degradable plastic** which degrades on exposure to light.

Impact:-

- **Positive:-**
 - **Environment:-**
 - Bioplastics are better than petro plastics in terms of fossil-fuel consumption, greenhouse gas emissions and energy efficiency.
 - Biodegradable plastics are easy to recycle and are non-toxic.
 - They reduce carbon footprint
 - They do not involve the consumption of non-renewable raw materials
 - Their production reduces non-biodegradable waste that contaminates the environment
 - They do not contain additives that are harmful to health, such as phthalates or bisphenol A
 - They do not change the flavour or scent of the food contained
 - These are degradable, equally resistant and versatile, already used in agriculture, textile industry, medicine and, over all, in the container and packaging market, and biopolymers are already becoming popular in cities throughout Europe and the United States for ecological reason.
- **Negatives:-**
 - But in terms of **cost and applicability**, bioplastics are inferior to petro plastics.
 - Bioplastic production **requires almost 80% of the energy required** to produce common plastic.
 - In 2009, the Central Pollution Control Board tested 10 bioplastic samples but found only **40% cleared the test for biodegradability**.
 - Biggest concern about compostable plastic is it would take around 40 days to compost during which time it would have already been ingested by several small animal forms, with a likely injurious impact.
 - **Bioplastic claims biodegradability on exposure to water:-**
 - The only standards on this require that within six months, the plastic must have disintegrated into bits smaller than 2 millimetres and that biodegradation must have progressed so that at least 30% of the carbon has been converted by microorganisms (such as bacteria) into carbon dioxide.
 - This leaves the plastic to contaminate the seas for six months and more.
 - And if they touch the bottom of the sea, they may not degrade at all, because it is much colder than the 30 degrees Celsius that is their ideal degradation temperature.
 - According to scientists, such micro-plastics cause extreme damage to marine life.
 - People cannot differentiate bioplastics from regular plastics in the trash. In India there is hardly any segregation of wet and dry waste so it is unlikely that even the best bioplastics will be pulled out for treatment.
 - Not all bioplastics are biodegradable



Conclusion:

Instead of revolving around plastics its better in to alternative techniques which are more environment friendly like composting and making people aware about the importance of waste management and protecting environment.

Q) “Beat plastic pollution” the theme for World Environment Day, for its success in India, requires India to bring certain changes in its Plastic Waste Management Rules. Discuss. (250 words)

[Financial express](#)

[Reference](#)

Why this question

India, as the host country of World Environment Day, carries the onus to lead by example in management of plastic waste. Plastic waste management rules 2016 which have been amended in 2018, fills in certain gaps of the past rules but still requires several changes to function effectively. Topics related to plastic pollution is very important for mains this year.

Key demand of the question

The question expects us to analyze the details of the solid waste management rules 2016 and its amendments carried out in 2018, along with its implementation to assess their effectiveness in tackling plastic pollution.

Directive word

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.

Structure of the answer

Introduction – Mention the focus on tackling plastic pollution by making it the theme of world environment day, as several reports have highlighted the alarming magnitude to which this problem has grown.

Body

- *Mention the status quo regarding the extent of plastic pollution in India – data on generation, treatment etc of plastics. Paint the broad picture of the extent of plastic pollution for which the government has revised rules.*
- *Discuss the positives of the rules – EPR, attaching a monetary worth to plastics etc.*
- *Thereafter, bring out the points in the rules which either impede, or do not facilitate tackling plastic pollution. Also discuss the problems with implementation of these rules.*
- *Highlight the changes that need to be brought in the rules which would make dealing with plastic waste a little less cumbersome*

Conclusion – present your view on the changes required and the ways to achieve them.

Background:-

- India is faced with a paradox i.e., the same plastic that is powering Indian economy is also grossly polluting its environment. There is no organised process to deal with the 15,342 tonnes of plastic waste generated each day.

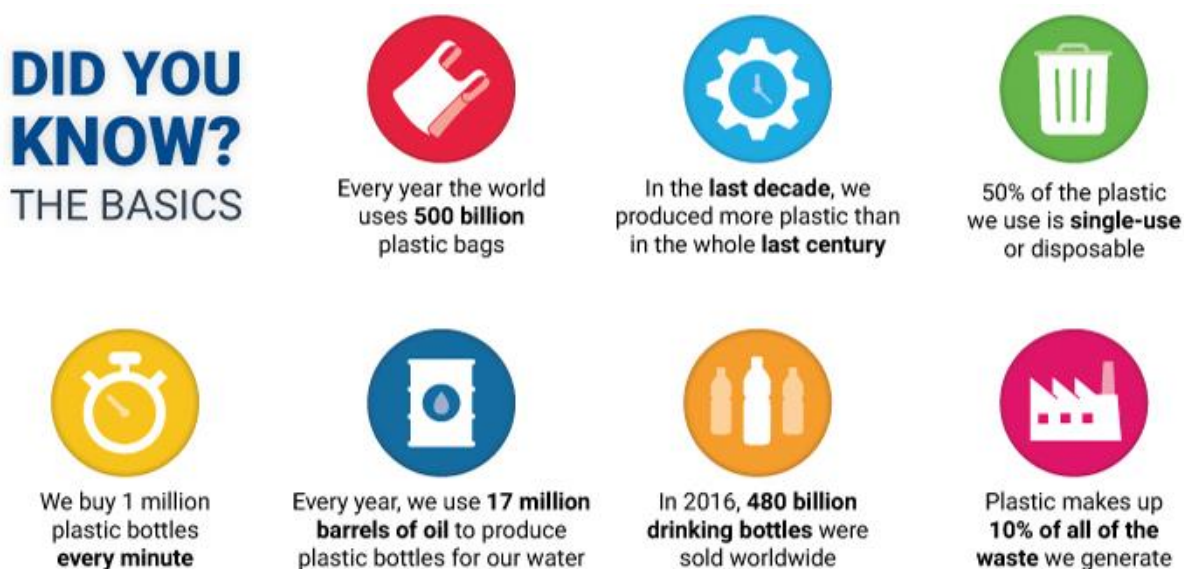
Plastic pollution in India:-

- According to Plastic Infrastructure Report, 2017, **India consumes close to 12.8 million tonnes of plastic per annum, of which, close to 5 million tonnes is rendered as waste every year.**
- Seventy per cent of the plastic waste industry is informal in nature and no action plan for formalising the industry has been pushed in the last two years.



Measures undertaken:-

- The **Plastic Waste Management (PWM) Rules 2011**, introduced under the Environment Protection Act, 1986, established a framework that assigned responsibilities for plastic waste management to the urban local body (ULB) and set up a state level monitoring committee.
 - The rules also addressed the issue of carry bags by setting minimum standards for thickness and a mandate for retailers to charge a fee for each plastic bag made available.
- **The 2011 rules were succeeded by the PWM Rules 2016**, which tighten the rules (for example, banning plastic bags of less than 50 microns thickness), and also lay the foundation for accountability across the value-chain.
 - The new rules require producers and brand-owners to devise a plan in consultation with the local bodies to introduce a collect-back system.
 - The extended producers responsibility (EPR), would assist the municipalities in tackling the plastic waste issue.
 - The rules also state that the manufacture and use of multi-layered plastics that are hard to recycle must be phased out.
- Under the **Good and Service Tax (GST)**, plastic waste was put under a 5 per cent bracket, hurting the informal sector, which already lacks a concrete action plan.
- **Latest amendments to plastic management rules 2016:-**
 - **Rule 15 (Explicit pricing of carrying bags) has been omitted in the amendment.** It earlier required every vendor, who sold commodities in a carry bag, to register with their respective urban local body and pay a minimum fee of Rs 48,000 annum (4000/month) after the announcement of the bye-laws.
 - Other minor amendments include the addition of two more definitions: one on 'alternate use' and one on 'energy recovery'.
 - The section 13(2) now requires all brand owners and producers to register or renew registration with the concerned State Pollution Control Board (SPCB) or Pollution Control Committee if operational only in one or two states or union territories.
 - They have to do the same with the Central Pollution Control Board (CPCB), if the producers/brand owners are operating in more than two states or union territories.



Concerns :-

- Section 9 (3) of the latest amendment to plastic management rules 2016 gives plastic producers a scope to argue that their products can be put to some other use, if not recycled.
 - **This move tantamounts to revoking a complete ban, which it had implied earlier.**



- This type of plastic was supposed to be banned by March 2018, but it is nowhere near a phase-out.
- Implementation of the rules has been poor in all aspects and the amendment says nothing to strengthen it.:-
 - The status of plastic waste management in the country is grim even after the rules gave emphasis on banning plastics below 50 microns, phasing out use of multilayered packaging and introducing extended producer responsibility (EPR) for producers, importers and brand owners to ensure environmentally sound management of plastic products until the end of their lives.
- **The idea of extended producer responsibility (EPR), which was introduced in the rules of 2016, still remains nowhere** close to being implemented even after two years.
 - EPR targets have to be accounted for at the national level, irrespective of which state the products are sold or consumed in. **The amendment does not address these issues. Moreover, no example of deposit refund scheme system has been implemented in any state.**
- **Lack of adequate infrastructure for segregation and collection** is the key reason for inefficient plastic waste disposal.
 - Most municipal corporations still do not have a proper system of collection and segregation, given their lack of access to technology and infrastructure, which are needed to dispose of plastic waste in a cost- and resource-efficient way.
- The Solid Waste Management Rules, 2016, mandate ULBs to set up facilities for processing sorted dry waste. **However, the implementation has been rather bleak, owing to available land/space concerns.**
- **Source separation of waste, coupled with segregated collection and transportation, have been weak links in the waste supply-**
- Imposing penalties or fines is easier said than done in a democratic setup.
- **Plastic in oceans and forests are choking flora and fauna. In fact, plastic trash is expected to exceed the fish population in 2050.**
- Microplastics has ability to enter food chain with the highest concentration of the pollutants

Suggestions:-

- **ULBs could a take cue from cities like Bangalore where dry waste collection centres have not only been established** but also have a self-sustainable business model.
 - Municipalities must develop waste collection plans, coupled with outreach activities, to sensitise citizens on waste segregation.
- It is **imperative to develop a phase-wise implementation of the EPR programme with yearly targets** and a system of nationwide offsets and credit to ensure effective implementation of the rules.
- **International examples:-**
 - The success of imposing a plastic bag fee has also been established in cities like Chicago and Washington, showing that such interventions could be effective in shaping behaviour change.
 - The European Union is mulling new laws to ban some everyday single-use plastic products including straws, cutlery and plates citing plastic litter in oceans as the concern prompting the action.
 - **Encouraging plogging:-**
 - Picking up litter while jogging or strolling was kick-started on a small scale in a small part of Stockholm about an year ago, it has spread across the globe and India can adopt this as well.
 - Countries such as the U.S., Canada and the Netherlands have already put in place regulations to stop the use of microbeads in personal-care products. The sooner India adopts such regulations, the better
- Recycling has to ensure that **wastes are converted into products of the same quality**, if not better, compared to the original product.



- **Stop using single use plastic:-**
 - The Government of the state of Maharashtra has announced an ambitious ban of plastic bags, water bottles and other disposable plastic items in the state after the state civic bodies started facing serious problems on garbage disposing and its management.
 - Fine for violating the ban will be Rs 5,000 for the first offence, Rs 10,000 for the second and Rs 25,000 for the third offence or a three-month jail term or both.
- With a worldwide crisis due to plastic waste, **India has to involve all the stakeholders** take the responsibility of ensuring minimisation, reuse and recycling of plastic to the maximum.
 - Sensitise people to stop littering and segregate their waste. Nowadays the most popular eco-conscious effort is participating in beach cleanups.
- **Sanitary napkins made from biodegradable** material, menstrual cups should be promoted.

Q) Discuss some of the traditional water conservation structures/ techniques and examine their role in the present situation in India. (250 words)

Reference

Reference

Why this question

Although modern water conservation and harvesting techniques/ technologies are gaining prominence world over, the importance of traditional water conservation techniques is not overrated. The same conviction has been reiterated in several studies. The question is related to GS3 syllabus under the following heading-

Conservation, environmental pollution and degradation, environmental impact assessment.

Key demand of the question.

The question wants us to simply describe some of the traditional water conservation structures/ techniques and examine their role in the current water scenario in India.

Directive word

Discuss- This is an all encompassing directive which directs us to write at length about both the aspects of the question- Describe the traditional water conservation structures/ techniques and bring out the role of these structures/ techniques in the present context in India.

Structure of the answer

Introduction – *Mention the need to conserve water, given the prospects of severe water shortages across many parts of the country, exacerbated by the climate change and growing population.*

Body-

- *Discuss in points, various traditional water conservation structures/ techniques found across the country. E.g Jarukattu, Neeruganti system, Kattas, step-wells, Bavadis, dhamasha system etc. Take the help of the attached articles and other sources to frame your answer.*
- *Bring out the need for revival of traditional water conservation structures/ techniques in the wake of growing water scarcity, inherent advantages of traditional structures like low cost, more adapted to local condition, community knowledge and participation is evoked etc.*

Conclusion– *Bring out a fair, balanced and concise opinion on the overall desirability of traditional water conservation/ harvesting techniques/ structures.*



Background:-

- Ancient Indians understood the art of water governance. Most of India's traditional water management has been at the community level; relying upon diverse, imaginative and effective methods for harvesting, storing, and managing rainfall, runoff and stream flow.

Water scarcity in India:-

- **Many Indian cities, including Delhi and Bangalore, face a water crisis, especially that of freshwater.**
- A World Bank study puts the plight of the country in perspective: 163 million Indians lack access to safe drinking water; 210 million Indians lack access to improved sanitation; 21% of communicable diseases are linked to unsafe water.

Role of traditional water conservation structures in India at present:-

- Ecologically safe engineering marvels of water conservation have existed in India for nearly 1,500 years, including traditional systems of water harvesting, **such as the bawari, jhalara, nadi, tanka, and khadin.**
- **They continue to remain viable and cost-effective alternatives for replenishing depleted groundwater aquifers.** With government support, they could be revived, upgraded and productively combined with modern rainwater-saving techniques such as anicuts, percolation tanks, injection wells and subsurface barriers. This may be a far more sustainable approach to alleviating the water scarcity crisis across India.
- The basic concept underlying all these techniques is that rain should be harvested whenever and wherever it falls.

Some of the traditional water conservation structures:-

- **Katta:-**
 - Katta is a temporary structure made by binding mud and loose stones available locally. Built across small streams and rivers, this stone bund slows the flow of water, and stores a large amount (depending upon its height) during the dry months. **The collected water gradually seeps into ground and increase the water level of nearby wells. In coastal areas, they also minimize the flow of fresh water into the sea.**
 - It is a cost effective and simple method, used widely in rural areas. Series of stone bunds built one behind the other have proved to be more effective than modern concrete dams in some villages, as these local structures can be easily repaired by farmers themselves.
- **These water soak pits called as Madakas in Karnataka, Pemghara in Odisha and Johads in Rajasthan,** are one of the oldest systems used to conserve and recharge ground water. Water from Johads is still been widely used by farmers to irrigate fields in many parts of India. In fact, the arid state of Rajasthan has seen a drastic improvement in water conservation due to the revival of Johads
- **Bawaris** are unique stepwells that were once a part of the ancient networks of water storage in the cities of Rajasthan. The little rain that the region received would be diverted to man-made tanks through canals built on the hilly outskirts of cities.
 - The water would then percolate into the ground, raising the water table and recharging a deep and intricate network of aquifers.
- **In Himachal Pradesh, kuhls** (surface water channels) have been used since ancient times to carry glacial waters from rivers and streams into valley fields. These kuhls need to be desilted and fortified to prevent them from breaking during torrential rainfall.
- Another effective traditional water management system is **bamboo drip irrigation, practiced in the tribal pockets of the Khasi and Jaintia hills of Meghalaya.** In this, a network of bamboo pipes of varying diameters, lengths and positioning is used to harvest water from hill springs or streams. This can be adopted on a larger scale wherever possible.
- **Nagaland's Zabo is also a great way of collecting run-off in community tanks/ponds.** Rainwater that falls on forested hilltops is led by channels that deposit it in pond-like structures created on the terraced hillsides. The channels also pass through cattle yards, collecting the dung and urine of animals, before ultimately meandering into fields at the foot of the hill.



Q) Discuss the aims and strategy envisaged by Charlevoix Blueprint For Healthy Oceans, Seas And Resilient Coastal Communities. (250 words)

Reference

Why this question

Oceans and seas, are facing many challenges- acidification, marine pollution, overexploitation of fish stock etc. In this direction, recently, G7 countries, agreed to the Charlevoix Blueprint For Healthy Oceans, Seas And Resilient Coastal Communities. The question is related to GS 3 syllabus under the following heading-

Conservation, environmental pollution and degradation, environmental impact assessment.

And also to the GS 2 syllabus under the following heading-

Bilateral, regional and global groupings and agreements involving India and/or affecting India's interests

Key demand of the question.

The question simply wants us to mention and describe the aims/ commitments and also discuss how the blueprint wants to achieve those aims- what is the strategy envisaged.

Directive word

Discuss- this is an all-encompassing directive which mandates us to write in detail about the key demand of the question- aims and the strategy envisaged by the Charlevoix Blueprint For Healthy Oceans, Seas And Resilient Coastal Communities.

Structure of the answer

Introduction – *Mention that recently G7 countries agreed to the Charlevoix Blueprint For Healthy Oceans, Seas And Resilient Coastal Communities.*

Body-

- *Discuss in points the aims/ targets/ commitments of the Charlevoix Blueprint.*

E.g pursuing global efforts towards a sustainable and climate-resilient future, in particular reducing emissions while stimulating innovation and economic growth, enhancing adaptive capacity, strengthening resilience and reducing vulnerability to the impacts of climate change while ensuring a just transition to the broad participation of women and girls, both at home and in our commitment to support developing countries.

- *Discuss the strategy envisaged by the Blueprint.*

E.g Support better adaptation planning, emergency preparedness and recovery; Support innovative financing for coastal resilience; Increase the availability and sharing of science and data; Address IUU fishing and other drivers of overexploitation of fish stocks etc.

Conclusion – *Form a fair, balanced and a concise opinion on the above issue and suggest a way forward- e.g need of all the developed and developing countries together to address the issue holistically.*

Background:-

- Healthy oceans and seas directly support the livelihoods, food security and economic prosperity of billions of people. But oceans are riddled with ecological threats like plastic pollution, acidification, overexploitation of fish stocks etc .So Charlevoix Blueprint was necessary.

Charlevoix Blueprint For Healthy Oceans, Seas And Resilient Coastal Communities:-

- This was launched to protect the health of marine environments and ensure a sustainable use of marine resources as part of a renewed agenda to increase global biodiversity protection.

**Aims:-**

- Pursuing global efforts towards a sustainable and climate-resilient future especially particular **reducing emissions while stimulating innovation and economic growth, enhancing adaptive capacity**
- **strengthening resilience and reducing vulnerability to the impacts of climate change** while ensuring a just transition to the broad participation of women and girls

Strategy:-

- **Resilient Coasts and Coastal Communities**
 - **Support better adaptation planning, emergency preparedness and recovery:**
 - Encourage the **development of coastal management strategies** to help plan and build back better
 - Efforts will **support resilient and quality infrastructure in coasts and coastal communities**. This will include advancing the development and deployment of clean and resilient energy systems, including from renewable sources.
 - **Advocate for and support nature-based solutions**, such as the protection and rehabilitation of wetlands, mangrove forests, seagrass beds and coral reefs.
 - Increase the capacity of these communities, to generate and communicate effective early warnings of extreme weather and other geo-hazard related risks.
 - Support early warning systems, including through efforts such as the Climate Risk and Early Warning Systems initiative
 - Develop gender-sensitive planning strategies that integrate economic growth, adaptation, sustainable development, conservation and sustainable use of biodiversity and disaster risk reduction.
 - **Support innovative financing for coastal resilience:**
 - **Mobilize greater support for increasing financial resources** available to build coastal resilience, particularly in developing countries, and exploring new and innovative financing with national and international public and private sector partners.
 - Explore broadening disaster risk insurance coverage, including through global and regional facilities, such as the InsuResilience Global Partnership, to extend high quality insurance coverage to vulnerable developing countries
 - Launch a joint G7 initiative to deploy Earth observation technologies and related applications to scale up capacities for the integrated management of coastal zones
 - **Ocean Knowledge: Science and Data**
 - **Increase the availability and sharing of science and data:**
 - Recognizing the value of ocean science, observation and seabed mapping, global observation and tracking efforts will be expanded.
 - Through enhanced global monitoring of oceans, and coordinating access to ocean science information, the availability of data will be improved.
 - Encourage the collection, analysis, dissemination and use of gender-sensitive data to bridge gaps in understanding the way women and girls are impacted by risks and catastrophic events
 - **Sustainable Oceans and Fisheries**
 - **Address IUU fishing and other drivers of overexploitation of fish stocks:**
 - Work globally to build **stronger public-private partnerships with key countries** and technology providers to deploy innovative platforms and technology to identify vessels that engage in IUU fishing.



- **Strengthen existing regional fisheries networks**
 - Encouraging participation of women in developing strategies for marine conservation through inclusive planning and implementation, capacity building and improved access to information for women.
 - Prohibiting harmful fish subsidies that contribute to overfishing
 - Will also support the implementation of the Global Record of Fishing Vessels, Refrigerated Transport Vessels, and Supply Vessels by providing our Phase 1 vessel data as soon as possible.
- **Support strategies to effectively protect and manage vulnerable areas of oceans and resources:**
 - Will advance efforts beyond the current 2020 Aichi targets including the establishment of marine protected areas (MPAs)
 - Will further advocate for the creation and implementation of effective and science-based MPAs and area-based conservation measures, in close alignment with relevant international frameworks, including in the high seas.
- **Ocean Plastic Waste and Marine Litter**
 - Recognise the **urgency of the threat of ocean plastic waste and marine litter to ecosystems and the lost value of plastics in the waste stream.**
 - Commit moving towards a more resource efficient and sustainable management of plastics.
 - Promote the harmonization of monitoring methodologies for marine litter and collaboration on research on its impacts, in cooperation, for example with the United Nations Environment Programme (UNEP) to facilitate this work.

Importance:-

- This will help improve oceans knowledge, promote sustainable oceans and fisheries, support resilient coasts and coastal communities and address ocean plastic waste and marine litter.
- Oceans and seas play a fundamental role in the global climate system and in supporting communities, jobs and livelihoods, food security, human health, biodiversity, economic prosperity and way of life. So preserving them is important.
- To deal with the following challenges:-
- Illegal, unreported and unregulated (IUU) fishing and overexploitation of fish stocks threaten entire species and food security.
- Marine pollution, including from plastic litter, is compounding the threats facing already degraded marine ecosystems.
- Ocean warming, acidification and sea-level rise, together with extreme weather events, are affecting communities globally.
- Arctic and low-lying coastal communities, particularly Small Island Developing States (SIDS), are among the most vulnerable.
- This **Blueprint underscores the importance of engaging and supporting all levels of government to develop and implement effective and innovative solutions**

Q) There is a need for a multipronged approach to reduce and ultimately phase out the consumption of plastics. Critically comment, in the light of the failure of the Plastic Waste Management Rules, to address the issue. (250 words)

[The hindu](#)

[Reference](#)



Why this question

Plastics have become ubiquitous not only in their usage but unfortunately due to their indiscriminate usage, in the environment as well. They pose significant health and environmental problems which demands reduction in the usage and ultimately phasing out plastics. In case of India, although we have Plastic Waste Management Rules in place, the usage of plastic has not come down and their recycle and reuse has not increased upto the expected levels. The issue is related to GS 3 syllabus under the following heading-

Conservation, environmental pollution and degradation, environmental impact assessment

Key demand of the question.

The question wants us to bring out the need (and key principles governing such approach) to reduce and ultimately phase out the use of plastics in India. We also have to shed light on why the Plastic Waste Management Rules already in place have not been able to address the issue.

Directive word

Critically Comment- We have to express our knowledge and understanding of the issue and based upon our discussion we have to form a personal opinion on the overall issue.

Structure of the answer

Introduction – Mention that India generates an estimated 16 lakh tonnes of plastic waste annually. Also mention that this plastics poses several environmental and health concerns for all the living species on earth.

Body–

- *Mention the key provisions of Plastic Waste Management Rules.*
- *Discuss in points the key provisions of the Plastic Waste Management Rules. E.g only multilayered plastics (MLP) allowed (which was however amended by the recent amendment to the rules and now the use is restricted to those plastics which have an alternate use and are energy recoverable); Burning of MLPs (energy conversion or alternate use) even though scientific procedures is not advisable as it omits harmful toxins, that affects environment and public health;*
- *Discuss in points why these rules have not been effective in achieving the desired goals. E.g lack of awareness, slack implementation, lack of support from civil society and people in general, lack of access to alternatives of plastic etc.*
- *Discuss how the issue should be handled. E.g decrease use and then phase out, involve the people and the civil society in the awareness and behavioural change process, more research on the quantity of plastics produced in the country, their effects on environment, plant and animal life and on the environment, strict enforcement of the rules etc*

Conclusion– *form a fair, balanced and a concise opinion on the overall issue. Mention the ocean charter recently agreed to by G7 minus 2.*

Background:-

- India generates an estimated 16 lakh tonnes of plastic waste annually. If sold at the global average rate of 50 cents a kg, it can generate a revenue of Rs.5,600 crore a year.
- Plastic waste continues to accumulate in the oceans. Almost 800 animal species are affected by marine debris, marine animals keep dying as a direct result of plastic, and microplastics have spread to the world's most remote areas.
- Up to 5 trillion plastic bags are used worldwide each year, amounting to almost 10 million plastic bags per minute , a recent report from the United Nations Environment Program (UNEP) indicated.



Plastic Waste Management Rules, 2016:-

- **The 2011 rules were succeeded by the PWM Rules 2016**, which tighten the rules (for example, banning plastic bags of less than 50 microns thickness), and also lay the foundation for accountability across the value-chain.
- The new rules **require producers and brand-owners to devise a plan in consultation with the local bodies to introduce a collect-back system.**
- The **extended producers responsibility (EPR)**, would assist the municipalities in tackling the plastic waste issue.
- The rules also state that the **manufacture and use of multi-layered plastics that are hard to recycle must be phased out.**
- **Increase minimum thickness of plastic carry bags** from 40 to 50 microns and stipulate minimum thickness of 50 micron for plastic sheets also to facilitate collection and recycle of plastic waste,
- **Expand the jurisdiction of applicability from the municipal area to rural areas**
- **To bring in the responsibilities of producers and generators**, both in plastic waste management system and to introduce collect back system of plastic waste by the producers/brand owners, as per extended producers responsibility
- **To introduce collection of plastic waste management fee through pre-registration of the producers**, importers of plastic carry bags/multilayered packaging and vendors selling the same for establishing the waste management system;
- **To promote use of plastic waste for road construction** as per Indian Road Congress guidelines or energy recovery, or waste to oil etc. for gainful utilization of waste and also address the waste disposal issue
- To entrust more responsibility on waste generators, namely payment of user charge as prescribed by local authority, collection and handing over of waste by the institutional generator, event organizers.
- The local bodies shall be responsible for setting up, operationalisation and co-ordination of the waste management system and for performing associated functions.
- Solid Waste Management Rules 2016, waste has to be segregated separately at source. This includes separation of dry (plastic, paper, metal, glass) and wet (kitchen and garden) waste at source.
- Companies should have already submitted plans, by September 2016, for waste collection systems based on extended producer responsibility (EPR) either through their own distribution channels or with the local body concerned.

Outcome from the new rules includes:

- Increasing the thickness of plastic carry bags from 40 to 50 micron and stipulation of 50 micron thickness for plastic sheets is likely to increase the cost by about 20 %. Hence, the tendency to provide free carry bags will come down and collection by the waste-pickers also increase to some extent.
 - More than 20 Indian States have announced a ban on plastic bags. Cities such as Bengaluru announced a complete ban (gazette notification), in 2016, on the manufacture, supply, sale and use of thermocol and plastic items irrespective of thickness.
- **Collect back system**
 - The introduction of the collect back system of waste generated from various products by the producers/brand owners of those products will improve the collection of plastic waste, its reuse/ recycle.
- **Phasing out of manufacture and use of non- recyclable multilayered plastic**
- **Responsibility of waste generator**
 - All institutional generators of plastic waste, shall segregate and store the waste generated by them in accordance with the Solid Waste Management Rules, and handover segregated wastes to authorized waste processing or disposal facilities or deposition centers, either on its own or through the authorized waste collection agency.



▪ **Land for waste management facility**

- The responsibility to provide land for establishing waste management facility has been made to the Department with business allocation of land allotment in the State Government. This would eliminate the issue of getting land for the waste management facility.

Criticisms:-

- Implementation of the rules has been poor in all aspects and the amendment says nothing to strengthen it.:-
 - The status of plastic waste management in the country is grim even after the rules gave emphasis on banning plastics below 50 microns, phasing out use of multilayered packaging and introducing extended producer responsibility (EPR) for producers, importers and brand owners to ensure environmentally sound management of plastic products until the end of their lives.
- **The idea of extended producer responsibility (EPR), which was introduced in the rules of 2016, still remains nowhere** close to being implemented even after two years.
 - EPR targets have to be accounted for at the national level, irrespective of which state the products are sold or consumed in. **The amendment does not address these issues. Moreover, no example of deposit refund scheme system has been implemented in any state.**
- **Lack of adequate infrastructure for segregation and collection** is the key reason for inefficient plastic waste disposal.
 - Most municipal corporations still do not have a proper system of collection and segregation, given their lack of access to technology and infrastructure, which are needed to dispose of plastic waste in a cost- and resource-efficient way.
- The Solid Waste Management Rules, 2016, mandate ULBs to set up facilities for processing sorted dry waste. **However, the implementation has been rather bleak, owing to available land/space concerns.**
- **Source separation of waste, coupled with segregated collection and transportation, have been weak links in the waste supply**
- Imposing penalties or fines is easier said than done in a democratic setup.
- Companies say that plastic waste is too complex or pretend to be completely unaware of these rules.

Way forward:-

- **Central Pollution Control Board (CPCB)** report has said that ban is barely effective
- **Citizens need to be aware of these rules, governments need to work with citizens to collect fines and companies need to be held accountable in terms of their environmental and social responsibilities.**
- Additionally, **there should be research on ways to implement these rules, waste generation quantities and trends and find innovative alternatives to plastic.**
- **ULBs could a take cue from cities like Bangalore where dry waste collection centres have not only been established** but also have a self-sustainable business model.
 - Municipalities must develop waste collection plans, coupled with outreach activities, to sensitise citizens on waste segregation.
- It is **imperative to develop a phase-wise implementation of the EPR programme with yearly targets** and a system of nationwide offsets and credit to ensure effective implementation of the rules.
- **International examples:-**
 - The success of imposing a plastic bag fee has also been established in cities like Chicago and Washington, showing that such interventions could be effective in shaping behaviour change.
 - The European Union is mulling new laws to ban some everyday single-use plastic products including straws, cutlery and plates citing plastic litter in oceans as the concern prompting the action.



- **Encouraging plogging:-**
 - Picking up litter while jogging or strolling was kick-started on a small scale in a small part of Stockholm about an year ago, it has spread across the globe and India can adopt this as well.
 - Countries such as the U.S., Canada and the Netherlands have already put in place regulations to stop the use of microbeads in personal-care products. The sooner India adopts such regulations, the better
- Recycling has to ensure that **wastes are converted into products of the same quality**, if not better, compared to the original product.
- **Stop using single use plastic:-**
 - The Government of the state of Maharashtra has announced an ambitious ban of plastic bags, water bottles and other disposable plastic items in the state after the state civic bodies started facing serious problems on garbage disposing and its management.
 - Fine for violating the ban will be Rs 5,000 for the first offence, Rs 10,000 for the second and Rs 25,000 for the third offence or a three-month jail term or both.
- With a worldwide crisis due to plastic waste, **India has to involve all the stakeholders** take the responsibility of ensuring minimisation, reuse and recycling of plastic to the maximum.
 - Sensitise people to stop littering and segregate their waste. Nowadays the most popular eco-conscious effort is participating in beach cleanups.
- **Sanitary napkins made from biodegradable** material, menstrual cups should be promoted.
- **Monetise plastic waste:-**
 - Canadian company monetises plastic waste in novel ways. It has one of the largest chains of waste plastic collection centres, where waste can be exchanged for anything (from cash to medical insurance to cooking fuel).
 - Through this, multinational corporations have invested in recycling infrastructure and in providing a steady and increased rate for waste plastic to incentivise collection in poor countries.
 - Such collection centres, like the ones operated by informal aggregators in India, can be very low-cost investments (a storage facility with a weighing scale and a smart phone).

Q) Discuss the efficacy of banning single use plastics in solid waste management? (250 words)

EPW

Why this question

Tackling plastic waste was the theme of the world environment day and has come under intense focus. Several states have banned the use of single use plastics, while a few have reversed this step. The effectiveness of banning single use plastics need to be analyzed in depth.

Key demand of the question

We need to discuss the pros and cons of implementing the policy of banning single use plastic. Alternatives to banning single use plastic may also be provided.

Directive word

Discuss – This is an all-encompassing directive – you have to debate on paper by going through the details of the issues concerned by examining each one of them. You have to give reasons for both for and against arguments.

Structure of the answer

Introduction – *Highlight the recent pledge by the government to ban all forms of plastic by 2022 and the step taken by state governments like Maharashtra to ban single use plastic.*



Body – Analyze the pros and cons of such a move. Highlight pros like the necessity to ban plastic because of its non biodegradable nature, the massive ill effects that dumping of plastic in oceans and as landfills have on ecosystem, the necessity of weaning people away from a convenient item like plastic etc. Highlight the cons like lack of assessment of its actual impact, lack of focus on collection and segregation which is the real bane of waste management etc. Discuss alternatives to banning.

Conclusion – Mention the way forward for mitigating the ill effects of plastic pollution.

Background:-

- Recently Maharashtra passed a decision to ban single-use plastics. This includes items such as thermocol plates, small polyethylene terephthalate (PET) bottles, flexes and plastic cutlery. With this ban, Maharashtra joined a list of over 18 states in the country, which have imposed a partial or complete ban on single-use plastics.

Why there is need to ban plastic :-

- So far plastic bans have not worked in India because the user was never penalised. But the Maharashtra law includes fines for users, which is good.
- It is necessary to ban plastic because of its non biodegradable nature.
- **Plastic in oceans and forests are choking flora and fauna. In fact, plastic trash is expected to exceed the fish population in 2050.**
- Microplastics has ability to enter food chain with the highest concentration of the pollutants.

Bad efficacy :-

- Across the world, bans on plastic (primarily polythene bags) and taxation of plastic bags have achieved mixed results, with many of them failing even in the developed world.
- Beyond implementation, there is also a **great deal of arbitrariness which surrounds the ban, beginning with the vague and broad set of reasons provided for its imposition.**
 - These include the nuisance of litter created by plastic bags (its non-biodegradable nature, the clogging of drains by plastic bags, its presence in water bodies and its excessive presence in landfills), the harm caused by plastics to marine and animal life (cows in particular), and as a potential threat to health.
- **Single-use, lightweight plastics are, many a times, not even a major source of municipal waste.**
- **In India, there are few or no reliable statistics on the scale and scope of the problem.**
 - Central Pollution Control Board (CPCB 2016) estimates the total plastic waste of Maharashtra to be 4,69,098 tonnes. However, this includes all manner of plastic waste, such as industrial plastic waste which is recyclable. **In terms of actual weights, there are no figures provided for the scale of lightweight single-use plastics such as polythene bags.**
- **What is not paid attention to is the collection and segregation of plastic within solid waste management. :-**
 - Most municipal corporations still do not have a proper system of collection and segregation, given their lack of access to technology and infrastructure, which are needed to dispose of plastic waste in a cost- and resource-efficient way
- The decision to ban single-use plastics has evoked a great deal of anger and resentment amongst the people working in the recycling trade.
 - Despite their presence for well over 50 years, recycling clusters in Mumbai have been ignored, and their contribution to waste management and sustainability in the regional economy has been discounted
- There are a bigger problem in terms of the volume of waste generated



- The **idea of extended producer responsibility (EPR), which was introduced in the rules of 2016, still remains nowhere** close to being implemented even after two years.
 - EPR targets have to be accounted for at the national level, irrespective of which state the products are sold or consumed in. **The amendment does not address these issues. Moreover, no example of deposit refund scheme system has been implemented in any state.**
- The Solid Waste Management Rules, 2016, mandate ULBs to set up facilities for processing sorted dry waste. **However, the implementation has been rather bleak, owing to available land/space concerns.**
- **Source separation of waste, coupled with segregated collection and transportation, have been weak links in the waste supply**
- Imposing penalties or fines is easier said than done in a democratic setup.

Way forward:-

- With a worldwide crisis due to plastic waste, **India has to involve all the stakeholders** take the responsibility of ensuring minimisation, reuse and recycling of plastic to the maximum.
 - Sensitise people to stop littering and segregate their waste. Nowadays the most popular eco-conscious effort is participating in beach cleanups.
- **International examples:-**
 - The success of imposing a plastic bag fee has also been established in cities like Chicago and Washington, showing that such interventions could be effective in shaping behaviour change.
 - The European Union is mulling new laws to ban some everyday single-use plastic products including straws, cutlery and plates citing plastic litter in oceans as the concern prompting the action.
 - Countries such as the U.S., Canada and the Netherlands have already put in place regulations to stop the use of microbeads in personal-care products. The sooner India adopts such regulations, the better
- **Encouraging plogging:-**
 - Picking up litter while jogging or strolling was kick-started on a small scale in a small part of Stockholm about an year ago, it has spread across the globe and India can adopt this as well.

Q) Critically analyze the policy of enhancing the production and use of biofuels in airplanes, for a carbon neutral growth of the aviation industry. (250 words)

Reference

Reference

Why this question

The International Civil Aviation Organisation (ICAO) has recently mooted the idea of quickly scaling up the production and use of biofuels for aviation industry. However, the idea has been opposed by many environmentalists. The issue is related to GS-3 syllabus under the following heading-

Conservation, environmental pollution and degradation, environmental impact assessment.

Key demand of the question.

The question wants us to delve deep into the issue, and identify and discuss the important aspects of the question. We have to deliberate on the pros and cons of such a policy/action and form a personal opinion on the issue, based on our understanding and knowledge on various aspects of the question.

Directive word

Critically analyze- We have to identify the key demand and discuss all the related and important aspects of the question. Here we have to discuss the pros and cons of increasing the use and



production of biofuels in the aviation sector. Based on our discussion, we have to form a personal opinion on the issue.

Structure of the answer

Introduction – *mention the rising aviation emissions and the recent ICAO proposal to scale up the production and use of biofuels for aviation sector. You can also put some statistics related to aviation emissions (e.g Global energy consumption in the transport sector accounted for approximately 2,300 Mtoe in 2009, with 10 % of it consumed by global aviation).*

Body–

- *Discuss the pros/need for such an action/ policy. E.g advanced liquid have a high specific energy content, growth of aviation sector and consequent fuel demand which must be environmentally sensitive, biofuels do not emit sulfur dioxide, technically it is the only alternate available right now etc.*
- *Discuss in points the cons/ challenges involved of /in such an action/policy. E.g oxidation and gel formation of biodiesel, damage to hoses and gaskets, presence of harmful bacteria and fungi in biofuel engines, it may drive new deforestation in the name of growing biofuels, it would further expand monoculture plantations, land-grabbing and food price volatility, more biodiversity destruction, more agrochemical use, and pollution of freshwater etc.*

Conclusion– *based on the above discussion, form a fair and a balanced opinion on the overall issue.*

Background:-

- Global energy consumption in the transport sector accounted for approximately 2,300 Mtoe in 2009, with 10 % of it consumed by global aviation.
- Aviation emissions have taken an 8-per cent leap in Europe last year and the global CO₂ pollution is expected to rise fourfold, so the ICAO recently proposed to rapidly scale up use and production of biofuels in airplanes for a carbon neutral growth of the aviation industry by 2020.

Positives of this move and why biofuels in aviation is a better option:-

- As a result of the strong growth in the aviation industry, the CO₂ emissions produced by the sector are set to rise rapidly in the years ahead. **The use of sustainably produced biofuels is an essential element of structurally reducing these emissions**
- If the use of biofuels is increased to 285m tonnes by 2050, **almost half of the international aviation fuel demand would be met.**
- **Produced from renewable resources like plant materials, biofuels have emerged as a clean and sustainable source of fuel.**
 - Also the industry is planning to use Hydrotreated Vegetable Oil (HVO), which contains palm oil, which is the cheapest and abundantly available vegetable oil and its refining also doesn't cost as much as other plant oils.
- CO₂ can vary significantly depending on the type of biomass, where the biofuel is produced and the technology used. Emission reductions of up to 95% can be achieved if the biofuel is produced sustainably
- Low-carbon aviation biofuel could be grown that will not affect the environment and could reward farmers .
 - For instance in project Solaris instead of the usual petroleum-based jet fuel, the plane was burning thousands of litres of a clear liquid derived from the oil of nicotine-free tobacco plants .
- Advanced liquid biofuels have a high specific energy content unlike other fuels.
- Biofuels do not emit sulfur dioxide so technically it is the only alternate available right now



Negatives:-

- This move to promote biofuel **will be the end of rainforests in the world and will be new driver of deforestation.**
- Such ways to reduce carbon emissions would further **expand monoculture plantations, land-grabbing and food price volatility, more biodiversity destruction, more agrochemical use, and pollution of freshwater, without reducing the climate impacts of aviation.**
- **No credible scenarios exist for large-scale production** of biofuels at present. So far, only a handful of companies produce renewable jet fuel on a commercial scale.
- Challenge facing the use of biofuels in aviation is the **high quality standards requirement.**
- In order to boost the production of biofuels, **the entire production chain needs to be further developed. These developments take time.**
- **Use of food crops to produce biofuels could lead to higher agricultural commodity**
- Bioethanol cannot be used for air transport due to its low energy density, and because it doesn't combust effectively in 'thin air' at high altitude. Methanol and biogas are unsuitable for air transport for both technical and safety reasons.
- Biofuels will be an important measure, **but they are currently only available in small quantities at high cost**

Way forward:-

- Even though biofuels might seem like an economical solution at this point of time, in the forthcoming years, with an increase in the biofuel supply backed by stringent government policies, biofuels will emerge as the future of the aviation industry.
- Structural policy to stimulate the use of biofuels in the aviation industry is yet to be put into place at international level. **International agreements will therefore need to be reached to promote the use of biofuels in the aviation sector.**
- Sensible policies can minimise these downsides by promoting the use of non-food crops and wastes to produce biofuels and disincentivising feedstocks linked to unsustainable land-use change.
- **Making lighter engines:-**
 - A long series of gradual cuts in fuel use have been achieved by boosting engine efficiency and using lightweight materials for the body, such as in the current generation of 737s.

Q) Discuss the EIA guidelines for construction projects in India? Examine whether they need to be made more stringent in light of the recent protests in Delhi against the cutting down of trees? (250 words)

[The hindu](#)

[Livemint](#)

Why this question

The article explores two important threads of thought – the changed nature of environmental movements where urban citizens are taking the lead and the lax EIA norms for construction activities. Since EIA is a topic in GS3, this question becomes important.

Key demand of the question

The question first asks us to mention the EIA guidelines, particularly the lacunae in them. Examine whether the kind of changes being proposed would aggravate or address the problem. Discuss the need of a paradigm shift to take environmental concerns seriously by strengthening eia procedure.

Directive word

Examine – When you are asked to examine, you have to probe deeper into the topic, get into details, and find out the causes or implications if any .



Structure of the answer

Introduction – Highlight the protests in Delhi and the questions that it raises.

Body

- Mention that clearances for such projects were given. Discuss the EIA guidelines regarding construction projects
- Examine whether the changes under consideration would aggravate or address the issue. Bring out the perspective of need of construction for building low cost houses etc and the impact it has on environment.
- Discuss how can the norms be strengthened to reconcile both objectives.

Conclusion – Conclude your answer by emphasizing on the importance of tackling this in light of the heightened citizen awareness regarding environmental concerns.

Background:-

- Recently the government proposed to ease the environment rules for the building and construction sector, stipulating that projects of less than 50,000 square metres size would not require environment clearance (EC). There have been protests in Delhi recently over cutting of trees to redevelop residential colonies.

EIA guidelines for construction projects:-

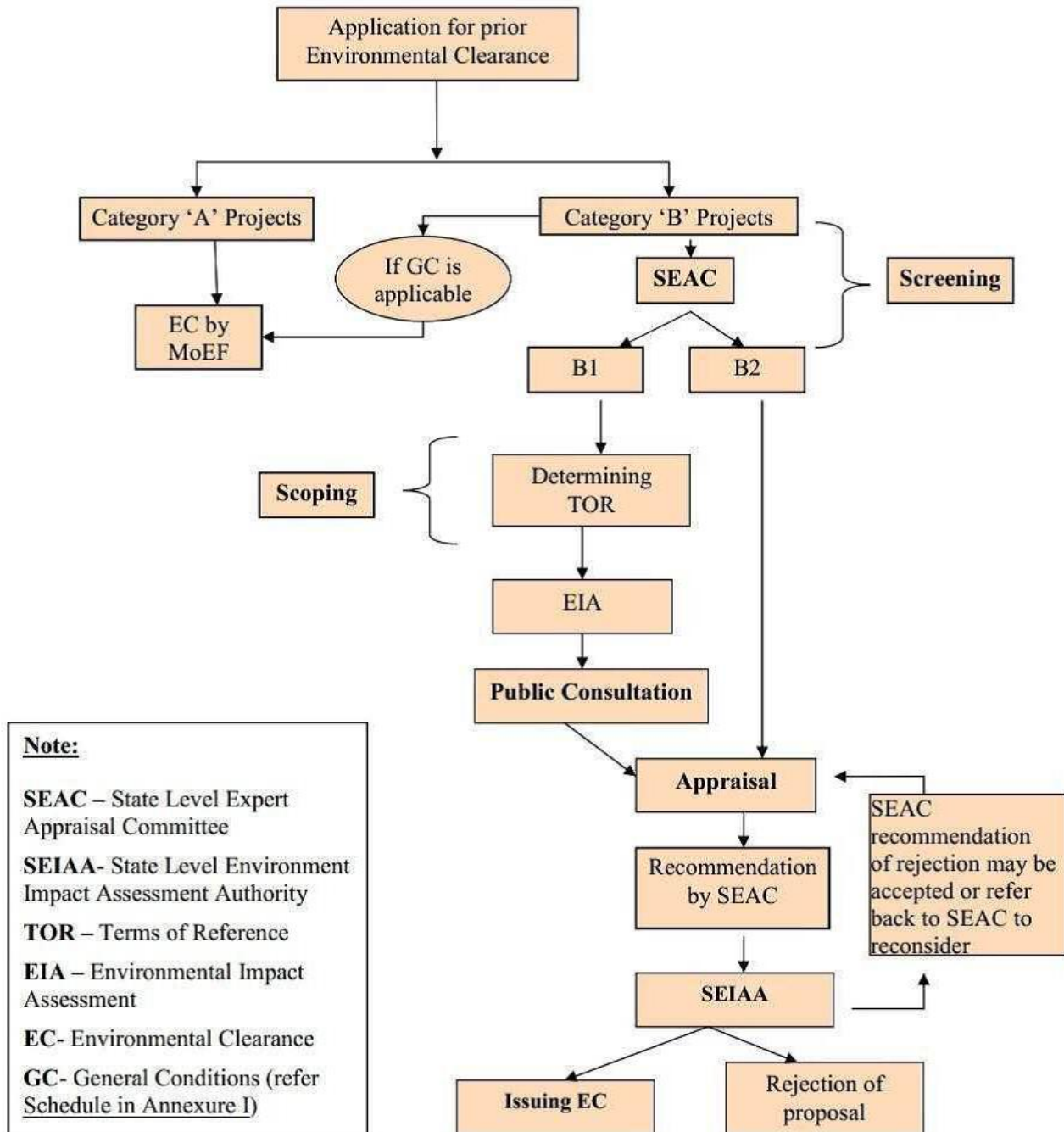
- The building and construction sector is governed under the Environmental Impact Assessment (EIA) notification 2006 under which any project of more than 20,000 square metres requires EC.
- But in December 2016, the Union environment ministry introduced a new system wherein projects up to 300,000 square metres would not need the mandatory EC once state authorities had integrated environmental conditions with their building bye-laws.
- Building and construction sector is governed under the Environmental Impact Assessment (EIA) notification 2006 under which any project of more than 20,000 square metres requires EC.
- EIA is a procedure used to examine the environmental consequences or impacts, both beneficial and adverse of a proposed development project and to ensure that these effects are taken into account in project design.
- The housing projects fall under category – 8 (a) of EIA Notification, 2006 (as amended). The built up area for the purpose of this Notification is defined as “the built up or covered area on all the floors put together including basement(s) and other service 8(b) of EIA notification deals with townships and area development projects.

Schematic Flow Diagram for Environmental Clearance for Housing Projects

- The environment impact assessment entails eight steps wherein each step is equally significant in influencing the overall performance of the project.
- Characteristically, the EIA progression commences with screening to certify that the time and reserves are concentrated at the proposals which matter environmentally and concludes with some kind of follow up on the execution of the verdicts and actions taken as an outcome of an EIA report.
- **The eight steps implicated in EIA processes are:**
 - (a) Screening: This first stage of EIA establishes whether the anticipated project, necessitates an EIA and if it does, then the intensity of assessment required.
 - (b) **Scoping:** This step recognizes the key issues and impacts which further needs to be investigated and also delineates the periphery and time limit of the study.
 - (c) Impact Analysis: The third stage of EIA identifies and envisages the likely ecological and social impact of the anticipated project and weighs upon the implication.
 - (d) Mitigation: Mitigation advocates the actions to lessen and steer clear of the possible adverse environmental upshots of development activities.
 - (e) Reporting: The end result of EIA is accounted in a form of a report to the decision making body and other concerned parties.



- (f) Review of EIA: It reviews the sufficiency and efficacy of the EIA report and makes available the information essential for decision-making.
- (g) Decision-Making: It decides whether the project is cast off, accepted or needs additional alterations.
- (h) Post Monitoring: This final step of EIA comes into play once the project is bespoke. It tries to make certain that the impacts of the project does not go beyond the officially permitted standards and execution of the mitigation measures are done in the manner as stated in the EIA report.



Yes they need to be more stringent:-

- Large constructions have been difficult to manage in India. **The sector has systematically lobbied to be excluded from the environmental norms of the country** and has been successful in carving out special privileges for itself in the environment clearance process.
- **From 2006, most construction projects have been approved based on an application form instead of detailed assessment reports. In 2014, schools, colleges and hostels for educational institutions were exempted from taking environment clearances as long as they followed specific sustainability parameters.**



- In 2016, projects with areas of less than 20,000 sq m were permitted to proceed as long as they submitted a self-declaration ensuring adherence to environmental norms. **As a result of these privileges, construction projects contribute significantly to urban air and noise pollution** and high water consumption in cities.
- Compensatory afforestation taken up in lieu of trees felled by projects is a failure due to poor survival rates of saplings and no monitoring.
- In a literate, urban society that has high access to the Internet, the lack of official information on urban development and its impacts can only be understood as an indirect form of public silencing. **There are no public hearings held for urban construction projects, and governments assume that citizens have nothing to say about them.**
- The notification of government was challenged in the NGT, which in its 2018 judgment, called the December 2016 notification of MoEFCC a ploy to circumvent the provisions of environmental assessment.
 - The tribunal had said that it would considerably dilute the environmental safeguards provided under the country's environmental laws and asked the environment ministry to re-examine the notification.

Way forward:-

- **The burden of resource use in upcoming buildings or urban housing projects can be minimized in many ways.**
 - Properly designed housing projects can provide numerous services such as purification of air and water, pollution control, mitigation of floods and droughts, re-generation of soil fertility, moderation of temperature extremes, climate change mitigation and enhancing the landscape quality.
- **The NCEPC, revived in a form reflecting the times, could be the body entrusted with the preparation of a workable policy document on "Environment and Development".**
 -
 - It could be fashioned on the model of the White House Council on Environmental Quality functioning in the US directly under the President.
 - The Indian version could be under the Prime Minister advising him on matters referred to it by him or taken up by it suo moto for enquiry.
 - The reason for locating the Committee directly under the Prime Minister is that environment being an all-embracing term, the issues it would deal with would often be the concern of more than one ministry and their examination has necessarily to be undertaken with a perspective larger than what any individual department or ministry may have.
- **The revival of the NCEPC need not be at the cost of the MOEF:-**
 - While the former would act as a senior policy adviser to the Prime Minister, the latter could continue to look after its present duties and responsibilities

Q) A recent report has highlighted uranium contamination in India's groundwater. Discuss the causes, its effects and ways to address the issue? (250 words)

[The hindu](#)

[Reference](#)

Why this question

The article highlights this new issue in groundwater which has serious implications. NITI Aayog's recent report on the situation of groundwater has already painted a bleak picture and uranium poisoning is the concern.

Key demand of the question

The question is fairly straightforward in its demand. It expects us to discuss what the issue is about, examine the causes behind uranium contamination of groundwater, the impact in health etc and the ways in which this problem can be nipped in its bud.



Directive word

Discuss – Here one has to mention the specific details asked in the question in their discussion.

Structure of the answer

Introduction – *Discuss the findings of the report in Environmental Science and Technology Letters.*

Body

- *Explain the problem – safe limit for uranium, how this increases the severity of groundwater crisis, in the past arsenic crisis was also a huge issue.*
- *Explain the causes such as naturally found in rocks, excessive pumping for groundwater, overuse of aquifers etc*
- *Discuss the impact it would have in health as well as add to water woes*
- *Examine how the problem can be addressed*

Conclusion – *Emphasize on the seriousness of the issue and the need to take preemptive active before the problem gets out of hand.*

Background:-

- Evidence of uranium contamination has accumulated from across India over the last decade.
- Scientists have found widespread uranium contamination in groundwater from aquifers across 16 states in India, much above the WHO provisional standard for the country.
- Study, published in Environmental Science and Technology Letters, has found over 30 micrograms per litre (mcg/l) of the heavy metal in parts of northwestern, southern and southeastern India.

Causes for uranium contamination in India's groundwater:-

- **A major gap in India's water-quality monitoring:-**
 - WHO has set a provisional safe drinking water standard of 30 micrograms of uranium per litre for India, a level that is consistent with US Environmental Protection Agency standards. **Despite this, uranium is not yet included in the list of contaminants monitored under the Bureau of Indian Standards' Drinking Water Specifications**
- **Over pumping of aquifers:-**
 - Many of India's aquifers are composed of clay, silt and gravel carried down from Himalayan weathering by streams or uranium-rich granitic rocks. When over-pumping of these aquifers groundwater occurs and their water levels decline, it **induces oxidation conditions that, in turn, enhance uranium enrichment in the shallow groundwater that remains.**
- **Factors that may drive high uranium concentrations in groundwater are:-**
 - Including uranium content in aquifer rocks
 - Groundwater chemistry that promotes the formation of soluble uranyl carbonate complexes.
 - Water-rock interactions that cause the uranium to be extracted from those rocks
 - Oxidation conditions that enhance the extracted uranium's solubility in water
 - Interaction of the extracted uranium with other chemicals in the groundwater, such as bicarbonate, which can further enhance its solubility. In many parts of India, these factors co-occur and result in high uranium concentrations in the groundwater,
- **Human factors:-**
 - Human activities, especially the over-exploitation of groundwater for agricultural irrigation, may contribute to the problem
 - While the primary source of uranium is geogenic, anthropogenic factors such as groundwater table decline and nitrate pollution may further enhance uranium mobilization



- Another critical area of research is the mechanism by which uranium enters groundwater. The Environmental Science paper identified two types of terrains with heavy contamination. In Rajasthan and other northwestern regions, uranium occurs mostly in alluvial aquifers while in southern regions such as Telangana, crystalline rocks such as granite seem to be the source. **When groundwater is over-extracted from such soils, the researchers suggest, the uranium is exposed to air, triggering its release.**

Effects:-

- Drinking such water can damage one's kidneys, and the World Health Organization prescribes 30 mcg/l as an upper limit.
- But the chronic effects of uranium consumption are still unknown
- India is already a water scarce country so this revelation will further add to the water woes suffered by India.
- India is the world's largest user of groundwater, with World Bank reporting that more than 60 per cent of irrigated agriculture and 85 per cent of drinking water are dependent on the resource, which is pumped up through borewells. This leads to further complications.
- Uranium in drinking water raises concerns not because of radioactivity but mainly because of its chemical toxicity.
- Uranium may also accumulate in crops irrigated with uranium-containing water.

Ways to address the issue:-

- There is a need for revision of the current water quality monitoring program in India, evaluation of human health risks in areas of high uranium prevalence, development of adequate remediation technologies, and, above all, implementation of preventive management practices to address this problem.
- Including a uranium standard in the Bureau of Indian Standards' Drinking Water Specification based on uranium's kidney-harming effects, establishing monitoring systems to identify at-risk areas, and exploring new ways to prevent or treat uranium contamination will help ensure access to safe drinking water for tens of millions in India.
- It is urgent to make testing for uranium a routine part of the groundwater quality monitoring programme.

Topic: Disaster and disaster management.

Q) It is not deficit monsoon, rather the lack of policies and mechanisms to drought-proof susceptible areas that has turned the situation in India so severe. Examine. (250 words)

Reference

Reference

Why this question

Drought is a huge challenge for the government. With climate change adversely affecting monsoons each year, it is imperative for us to analyze whether we have been able to get the policy steps to tackle drought right.

Key demand of the question

The question expects us to first explain the causes of drought, whether lack of rainfall is the only reason. Thereafter, we need to highlight the lacunae in governmental policy to tackle drought. We should briefly highlight the seriousness of the problem and end with a way forward.

Directive word

Examine – When you are asked to examine, you have to probe deeper into the topic, get into details, and find out the causes or implications if any .

Structure of the answer

Introduction – *Bring out the fact through relevant data that drought is a recurring problem for India and needs deeper analysis.*



Body – *Examine the reasons of drought to evaluate whether lack of rainfall is the sole reason and how far mismanagement of drought by government is responsible for the current state. Delve deeper into the lacunae in governmental policies to prevent drought as well as in capacity building to withstand drought. Analyze whether we have been successful in creating natural assets, utilize our traditional water harvesting systems, our agricultural policies which have induced drought like situations in certain parts, our mismanagement of groundwater reserves etc. Discuss the impact of these gaps by emphasizing on how serious the situation has become.*

Conclusion – *Highlight the importance of urgently tackling this issue and discuss way forward.*

Background:-

- Officially, drought is a permanent disaster that strikes, on an average, 50 million Indians every year; 33 per cent of the country is chronically drought-affected while close to 68 per cent areas are drought-prone.
- India has more than 150 years of experience in drought management. Despite this, every time the country faces a deficit monsoon, we plunge into a crisis.

Main cause of drought is due to lack of rainfall:-

- The existing problems of rainfed regions, if not addressed in time, will get more acute in the coming years due to global warming and climate change. **There would be a downward trend in the number of wet days in a year; in a country which gets rain only for less than 100 hours in a year (a year has 8,760 hours), this would be disastrous.**
- Deficient and uneven rainfall in the last two agricultural years adversely affected overall agricultural production

Measures taken:-

- In the last six decades India has spent more than Rs 3.5 lakh crore on water conservation and drought-proofing.
- Particularly, in the last one decade, the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) has helped create, on an average, 21 water bodies in every village. Some 12.3 million water harvesting structures have been built.
- India has a better monsoon forecasting system than India had before and crisis response management has improved.

However policy mechanisms are to be blamed more:-

- **Centre-state non cooperation:-**
 - Earlier, the states could approach the Centre for drought relief without restrictions of the category of drought, and ask for monetary help under the Calamity Relief Fund and the National Calamity Contingency Fund.
 - However new “Manual for Drought Management” says that the states can ask for Centre’s help only if the drought is “severe”. Also the parameters that make a drought “severe” are extremely stringent.
- Maharashtra launched Jalyukt Shivar Abhiyaan to make the state drought-free by 2019 by carrying out decentralised soil and water conservation works. **But the situation on the ground remains worrisome.**
- Other contributing factors such as **rapid population growth, depletion of groundwater resources, poor water management, chronic lack of investment in storage systems, greater urbanization, consequent large-scale deforestation and leveling of water bodies like large ponds and lakes for legal or illegal constructions have added to the water problems.**
- **Water intensive crops:-**
 - Government policies such as subsidies for particularly water-intensive crops as well as heavy irrigation methods for having contributed to the problem.
 - There is a political reluctance to control water-hungry crops in low-rainfall regions, such as sugarcane in Maharashtra and paddy in Punjab.
- Successive Indian governments have for many decades **failed to invest in rural infrastructure**, particularly water storage and irrigation infrastructure, which has been a major contributor to the drought problems of India



- The policy approach to agriculture since the 90s has been to secure increased production by subsidising inputs such as power, water and fertiliser; and by increasing the minimum support price, **rather than by building new capital assets in surface irrigation, rainwater harvesting, improving credit for smallholders and evolving new drought-resistant technologies.**
 - This has shifted the production base from low-cost regions to high-cost ones, causing an increase in the cost of production, regional imbalance and an increase in the burden of storage and transport of produce.
- **Exploitation of groundwater:-**
 - **Policies have resulted in excessive use of capital on farms, such as too many tubewells in water-scarce regions.**
 - Groundwater, as opposed to surface and sub-soil water, has become the main source of irrigation, leading to more than 30% of the blocks in the country getting classified as semi-critical, critical or overexploited.
 - As there is no effective control over the digging of tubewells in water-scarce regions, farmers are borrowing money from informal sources at high interest rates to dig tubewells, but many such borings fail, leading to indebtedness and even suicides.
- **Lack of participation:-**
 - The government of India has announced several programmes in soil and water conservation but, when undertaken by the agriculture department, these remain departmental in approach with no involvement of people. Maintenance of the created assets suffers, as beneficiaries are not motivated to assume responsibility for maintenance.
 - Watershed development programmes cannot succeed without full participation of project beneficiaries and careful attention to issues of social organisation. Despite the fact that MGNREGA mandates that 80% of work must be related to local water conservation and drought-proofing, the sustainability and productivity of assets created is never monitored.

Impact:-

- Impact of drought is felt directly by farmers, due to poor crop yields or crop failures, which results in reduced farm incomes, and this has **wider transmission effects throughout rural communities due to lower consumer spending by agricultural households.**
- Many farmers in India are **also deeply indebted and need good harvests to allow them to recoup financial losses and repay loans.**
- Drought is a major factor in the thousands of **farmer suicides** afflicting India over the last few decades.

Way forward:-

- A **large-scale national water infrastructure development program** that will not only use Indian public funds but also leverage international aid assistance and other forms of development finance to rapidly build up national water storage capacity is needed.
- **India need to build a much larger network of big water reservoirs** as well as regional and local water storage systems.
- In parallel, **advanced agricultural irrigation systems** should be integrated into low rainfall areas of India, utilizing advanced technology that is used in arid areas of countries such as the US, Australia and Israel
- **Modernization of urban waterworks** is also very important in order to prevent large-scale loss of water through leaking and damaged pipes.
- In the short term, however, the Indian government can take certain preemptive and proactive steps to lessen the vulnerability of people to drought.
 - This should entail **providing more financial support to farmers; staging awareness raising campaigns that teach people how to conserve water and use it more judiciously; and essentially giving people incentives to use water cautiously.**



- Need to reduce unrestricted mining of groundwater and ensure stricter implementation of environmentally sound cropping patterns.
- Drip irrigation and a water sprinkler approach, mulching and bed plantation, and construction of tanks and check dams should be promoted for water harvesting and conservation.
- Build efficient irrigation systems and water conservation strategies in rainfed regions, through conjunctive use of surface and groundwater. **Agriculture in semi-arid regions has to move from traditional, crop-centric farming to agri-pastoral-farm-forestry systems (fruit trees, shrubs, perennial grasses and small ruminants).**
- MS Swaminathan, as a long-term solution to drought and financial support to farmers, advocated the **implementation of the Minimum Support Price. He recommended pricing and procurement based on total cost of production plus 50 percent principal.**

Q) Storms are the new normal for India and provide several lessons for disaster preparedness. Examine (250 words)

[Financial express](#)

[Reference](#)

[Financial express](#)

Why this question

With the number of deaths due to sandstorms crossing 50, and northern India bearing the brunt of excessive sandstorms, environmentalists such as Sunita Narain have analyzed the nature of these storms and held that they are going to be a recurring feature. This makes it necessary for disaster management agencies to learn lessons and be better prepared for future.

Key demand of the question

The question expects us to first explain the reasons behind the spate of storms in India and explain why it may become a regular occurrence in India. Thereafter, highlight how it led to huge number of deaths and the lessons that ought to be learnt from a disaster management point of view. Highlight the changes required in our strategy to stay better prepared for any eventuality.

Directive word

Examine – When you are asked to examine, you have to probe deeper into the topic, get into details, and find out the causes or implications if any. In this question, examine the causes of the storm, impact on disaster management in terms of lesson learnt and changes required.

Structure of the answer

Introduction – Highlight why this topic is in news.

Body – Explain the reasons for storm both natural as well as anthropogenic factors. Examine whether it is indeed going to be a recurring feature in India's climate. Thereafter discuss the impact of the storm on life and property in brief and emphasize on the lessons that ought to be learnt from this storm, just as we learnt lessons for dealing with heat waves. Finally, bring out the changes required in our disaster management strategy that would enable us to better deal with such sand storms in the future by mitigating loss of life and property.

Conclusion – Summarize the views expressed above and emphasize on the need for charting a strategy.

Background:-

- In the recent storms that engulfed north India five hundred Indians died because of storms.
- Uttar Pradesh, Rajasthan and Bihar are among the state that have recorded several deaths due to storms



Why are storms becoming the new normal for India:-

- Mismanagement of land, forest and water resources is causing **increased desertification**
- **Anthropogenic climate change** is causing frequent and hitherto unseasonal storms.
- **Western disturbances:-**
 - There is a marked increase in Western Disturbances (WDs) winds originating in the Mediterranean that blow over West Asia and reach the Himalayas where, blocked by the mountains, they cause snow/rainfall.
 - The WDs collide with the cyclonic, moisture-heavy systems from a warming Bay of Bengal which is the recipe for the perfect storm.
- The fact that this summer has been warmer than before means vast stretches in these areas will be drier, and hence, dustier than before.
- High temperatures in Rajasthan and its surrounding areas, and easterly winds bringing in moisture that also pointed to the possibility of intense thunder activity in the region

Issues with India's disaster preparedness during these storms:-

- Looking at the loss of life and the damage caused by the storms, questions are being raised about the effectiveness of India's weather alerts system.
- Apart from the Met department's headquarters in Delhi, **its regional meteorological centres also issue weather warnings for their respective regions and alert the district collectors**. However, an investigation found that no such warning was issued by the Regional Meteorological Centre in Jaipur to district collectors before Wednesday's storm.
 - Also, the city's Doppler Weather Radar which can accurately assess the severity and direction of storms had not been functional for a few days.
- **Met department has no official system of collecting information** on state-wise lightning deaths.
- Met **department's alerts are vague and ambiguous**, on the other hand, **dissemination of information is a slow and long process**.
- **Non-user-friendly language of weather forecasts** among others

How storms provide lessons for disaster preparedness in India:-

- India needs to improve its **forecasting ability, dust reduction management and management of its water resources**.
- The department should have properly warned the states about the possible intensity of the storm and issued area-specific alerts by collaborating with the to-be-affected districts.
- **Weather warning has to be specific**, else people do not take these alerts seriously.
- **Better communication:-**
 - **Mobile phone applications or text message alerts can be used for swifter and wider dissemination of information**.
 - With effective communication methods using multiple channels of national television, national radio, social media, print and electronic media, local FM radio stations, etc., people could have been warned well in time.
 - The forecast needs to be converted into a **well-worded, easy to understand pictorial warning** in local language for maximum impact.
 - Social media plays a very important role in spreading the message around in incredibly fast manner. This could have been used to the advantage of the people.
- The **local administration** could have also proactively made certain arrangements – for instance shifting them to safer places like school buildings, community centres, other safe government and private buildings for the safety of the people.



Topic – Various Security forces and agencies and their mandate.

Q) Discuss the role of BSF in protecting the country's borders and its sovereignty. (250 words)

Reference

Why this question

The question is related to GS-3 syllabus under the following heading- Various Security forces and agencies and their mandate.

Key demand of the question.

The question wants us to simply discuss the role and responsibilities of the Border Security Force of India. We should be as descriptive as possible and we should also highlight some of the major contributions of BSF.

Directive word

Discuss- this is an all-encompassing directive which directs us to write at length about the role of BSF in guarding the country's borders and protecting its sovereignty.

Structure of the answer

Introduction – give a brief description of The BSF- that it is a paramilitary force under home ministry and established in 1965 and being the world's largest border guarding force.

Body –

Mention in points, the responsibilities of the BSF. Divide the responsibilities into wartime and peace-time duties. Also, mention some of the major contributions of BSF.

Take help of the link attached to the question to frame your answer.

Conclusion- *Bring out a fair and concise conclusion on the great role played by BSF under the difficult environments.*

Background:-

- Considering the vastness of India and its border, different border guarding forces are deployed.
- BSF is responsible for guarding India-Pakistan and India-Bangladesh borders.
- BSF is a paramilitary force under home ministry responsible for guarding India's land border during peace time and preventing transnational crime.
- BSF currently stands as the world's largest border guarding force with 186 battalions and 2.57 lakh personnel including an expanding air wing, marine wing, artillery regiments, and commando units.

Role:-

- **Peace time:**
 - Promote a sense of security among the people living in the border areas.
 - Prevent trans border crimes, unauthorized entry into or exit from the territory of India
 - Prevent smuggling and any other illegal activity.
 - In 2017 Border Security Force (BSF) personnel detected a cross-border tunnel in the forest area of Damala nullah in Jammu's Arnia sub-sector.
 - BSF personnel have been performing Internal Security Duty in Manipur for the last two years and have been successfully fighting insurgency in those areas.
 - During the earthquake in Gujarat in 2001, the BSF was the first to reach out to help the distressed people and during the communal disturbances BSF personnel went all out to restore amity and brotherhood among the people.
 - The BSF took over the erection of the border fencing in Jammu & Kashmir



- The BSF has been defending the borders along with the army and checking infiltration on the borders during the current standoff with Pakistan.
- **War Time:**
 - **Holding ground in less threatened sectors so long as the main attack does not develop in a particular sector**
 - The BSF units can continue to remain deployed in particular sector even in a war situation to release the Army for offensive tasks. In the even of a major attack developing, which is not within the capacity of the BSF to deal with, the Army can be expected either to reinforce the BSF with Artillery or other support, or relieve the BSF from its role in the particular sector.
 - **Protection of vital installations** particular air-fields against enemy commandoes/para troopers or raids.
 - **Providing extension to the flanks of main defence line** by the holding of strong points in conjunction with other units.
 - **Limited Aggressive action against para military or irregular forces of the enemy within the overall plan of the Armed Forces .**
 - **Performing special tasks connected with intelligence including raids.** These are tasks which might be entrusted to BSF Units by the Army in a war situation according to local necessity. It would, however, be expected that the state of training and equipment of the particular BSF Units would be kept in view in assessing their adequacy for the tasks.
 - **Acting as guides in an area of responsibility where routes are known.** This is a task which the BSF should be able to perform.
 - **Maintenance of law and order in enemy territory administrated under the control of Army.** Normally, ordinary civil police force would be utilised for this task but the BSF could be used to supplement the civil police or to act in lieu thereof in a situation where civil police is not readily available.
 - **Provision of escorts.**
 - **Guarding of prisoners of war cages**
 - **Assistance in control of refugees.** It is the intention to utilise civil police force and armed Home Guards etc. for these tasks but again depending upon local exigencies, the BSF might be entrusted with these tasks.
 - **Anti – infiltration duties in specified area.** This is an important responsibility which will have to be performed by security forces. The exact responsibility of the BSF in this matter is still under consideration and separate instructions are expected to be issued.
 - During the Kargil conflict in 1999, the BSF remained on the heights of the mountains and defended the integrity of the country with all the might at its command in unison with the Army

TOPIC: Linkages between development and spread of extremism; Role of external state and non-state actors in creating challenges to internal security.

Q) Discuss the role of SFIO in tackling white collar crimes? Examine its weaknesses? (250 words)

EPW

Why this question

As our economy develops, white collar crimes see a steep increase. Off late, several instances of corporate fraud such as Nirav Modi case etc has come to the limelight. SFIO is an organisation whose mandate is to deal with such white collar crimes. It's importance has increased in recent times and thus needs to be studied in detail.



Key demand of the question

The question is quite straightforward in its demand. It expects us to detail out the role of SFIO, its powers, its mandate, why the role of SFIO is critical for the economy. Thereafter, we have to bring out the challenges it works under and the way forward.

Directive word

Discuss – The overall role, legal framework, mandate, impact etc has to be brought out.

Examine – When you are asked to examine, you have to probe deeper into the topic, get into details, and find out the causes or implications if any .

Structure of the answer

Introduction – *Highlight the fact that with more formalization and regulations in the economy, white collar crimes see an increase. This brings into focus the role of organisations like SFIO.*

Body

- *Detail out the role of SFIO, its mandate, the legal provisions, its modus operandi, the impact its role has*
- *Thereafter bring out the weaknesses that SFIO suffers from – inter agency coordination, shortage of manpower etc*
- *Also mention the way forward*

Conclusion – *Highlight the importance of organizations like SFIO and the critical role they play in maintaining a stable economy. Mention the need for addressing their issues.*

Background:-

- Over the last 15 years, but since 2013, the Serious Fraud Investigation Office (SFIO) has emerged as India's premier corporate fraud investigation agency, investigating several high-profile cases

SFIO:-

- SFIO comes under the Ministry of Corporate Affairs (MCA)
- It is a multi-disciplinary organisation that investigates and guides prosecution in white-collar fraud requiring expertise in forensic auditing, corporate law, information technology, capital markets, taxation, and other allied fields.
- It was established in 2003, based on recommendations by the Naresh Chandra Committee on Corporate Audit and Governance.
- It received statutory powers under the Companies Act, 2013
- The rules giving it the power to make arrests came into effect in 2017.
- Since its inception, the SFIO was understood to be a specialized organisation that would require a wide spectrum of expertise, and recruitment would be in large part deputation-based, drawing on expertise from various civil services cadres, and on consultants with the required expertise.
- Cases are assigned to the SFIO based on the scale of financial misappropriation or extent of public interest that is at stake.
- The most recent high-profile corporate fraud by Nirav Modi and Mehul Choksi, who have allegedly defrauded Punjab National Bank, is also being investigated by the SFIO.

Positives:-

- Over the last 15 years, several such high-level cases of corporate fraud have been investigated by the SFIO, including the companies involved in the 2G spectrum allocations, the Kingfisher Airlines case, the Saradha chit fund scam, and the Satyam computers fraud, to name a few.
- In many of these cases, the SFIO has invariably found that much of the crime is perpetrated along with auditors who actively collude or look the other way.



- According to a 2015 SFIO report, a third of the top 500 companies in India were “managing” their accounts, including those in the top 100. In some cases, the SFIO advised the Institute of Chartered Accountants of India to investigate the role of errant accountants.
- **An independent well-functioning SFIO will keep corporate greed and colluding auditors in check, and will be one way of upholding the law, as well as the interests of the retail investor and the public at large.**

Negatives:-

- The rise in financial crime underscores the need for a specialised agency to do cutting edge investigation and ensure quick closure of cases. However, **the SFIO’s track record has been dismal so far.**
- **Vacancies in the SFIO :-**
 - Due to the dearth of personnel with adequate experience and expertise for this kind of work.
 - The number of sanctioned positions, however, has remained stagnant at around 133 since 2014–15 and 69 positions lie vacant.
- **SFIO may initiate prosecution only when the Central government directs it to do so.**
 - Experts believe that the alleged involvement of politicians in the Saradha scam, as well as the recent uproar over the government’s interference with the CBI investigation into Coalgate, sharply highlights the danger of such dependence.
- The absence of adequate resources could thus quite easily thwart the new SFIO.
- It remains to be seen whether SFIO’s authority to arrest will act as a sufficient deterrent to such attempts to cloud the investigation.

Way forward:-

- Parliamentary Standing Committee on Finance had said that the SFIO should fill its vacancies with **adequate permanent cadre and strengthen both its investigative and prosecution arms by developing a foolproof fraud detection mechanism.**

Q) Kashmir has proven to be an intractable challenge for the Indian state and requires a fresh strategy. Critically analyze. (250 words)

Reference

Why this question

The recent spate of killings in the valley has again demonstrated how fragile peace in the valley is. Considering that the situation has shown no signs of improvement, critical analysis of the policy of Indian state in Kashmir is required.

Key demand of the question

The question expects us to explain the status quo in Kashmir. Thereafter, we need to mention the current strategy of dealing with the issue. The pros and cons of the strategy are to be mentioned and what kind of fresh thinking is required needs to be mentioned.

Directive word

Critically analyze – When asked to analyze, you have to examine methodically the structure or nature of the topic by separating it into component parts and present them as a whole in a summary. You need to conclude with a fair judgement, after analyzing the nature of each component part and interrelationship between them.

Structure of the answer

Introduction – *highlight the recent killing of a noted journalist and the rise of militancy in Kashmir and point to the fact that situation in Kashmir has only worsened with time.*



Body – Mention the new challenges that have arose in Kashmir – ground unrest, youth getting disillusioned by the idea of militancy in huge numbers, mass agitation in the form of stone pelting etc. Mention how the Government is dealing with the issue – excess of stick and less of carrot. Highlight the pros and cons of this strategy. Thereafter analyze what kind of new thinking is required – focus on the fact that more of carrot policy is required.

Conclusion – Mention your view on the present strategy employed by the government in Kashmir. Discuss the way forward for dealing with kashmir issue.

Background:-

- J & K Valley's prolonged anti-India protest; rising insurgency in Kashmir, intense counter- insurgency operation has caused acute distress in the region.

Why is Kashmir becoming a challenge to India:-

- **Changing nature of the militancy:-**
 - This has seen an escalation of local recruitment which has outpaced the numbers the security forces have been able to neutralise.
- **Mass participation in violent civil protest** involving stone pelting often at the site of an encounter or a funeral.
- Despite a major offensive by the Indian Army against terrorists this year, the number of **locally recruited terrorists has increased**.
- **Foreign terrorists** infiltrating into India from across the border are setting up hideouts which could be used a training grounds for these local Kashmiri men.
- According to the widely-cited reports, each **encounter in the valley triggers a surge in militant recruitment** which far exceeds militants killed in counter-insurgency operations.
- More disturbing than the rise in local recruitment into militancy is the **rising public support for militancy**. Open support by locals to trapped militants particularly during encounters enabling their easy escape, has entirely changed the relationship between the locals and the militants.
- The presence of active militants at the funerals, where they give so-called gun salutes to their slain comrades, has particularly unnerved the security forces.
- Poor and Unemployed youth are easily being targeted by radicalists.
- Anger in the Valley is higher than it has been in two decades and has reached alarming proportions. Peace and reconciliation process is failing.
- In the absence of a political and reconciliation process, asking security forces to show restraint in the face of constant stoning is not feasible.

Present strategies

- Government has initiated "Operation All out" to deal with militant and violent activities in the valley. The operation involves killing of Militants in the Kashmir region to install terror in minds of Kashmiri Youth.
- **Ceasefire:-**
 - Recently government came out with a **unilateral cessation of military operations during the month of Ramadan which marks a significant shift in the government's four-year old Kashmir policy**.
 - It also constitutes a belated recognition that unwarranted trust on hard power cannot bear desired results. In all probability, the ceasefire is likely to be extended beyond the month of Ramadan.
 - **From past experience** it is visible that even though the counterinsurgency of the 1990s did not end insurgency, it did pave the way for a peace process that made progress towards ending armed conflict .
 - **There will be immediate relief to the beleaguered residents of the State.**



- **Can give way for further discussions:-**
 - The ceasefire can only provide an opportunity for other steps to be taken, such as India-Pakistan talks, dialogue with the Hurriyat and allied groups, and backchannel negotiations for a reciprocal ceasefire by armed groups.
 - This initiative has the potential to end the deadlock and facilitate a larger engagement and dialogue, not only between the governments of India and Pakistan but also among civil society groups which exist on both sides of the Line of Control.
 - It is clearly evident that the Kashmir dispute can neither be settled through military means nor is war a viable option. **So ceasefire can lead to dialogues.**

Issues with government strategy:-

- Though, **the government still remains undecided about resuming peace talks with Pakistan.**
- A hybrid policy of appeasing separatists along with stop-start counter-terror operations won't work.
- **Past experience:-**
 - During the first three months of the 2000 ceasefire, casualties amongst security forces rose sharply.
- There **might be continuing attacks on security forces under a unilateral ceasefire.** The ceasefire has seen a marked increase of violence in the state, capped by the assassination of journalist Shujaat Bukhari .
- **Time is not right for ceasefire:-**
 - There is **little public pressure on the armed groups.** The impetus for peace has been replaced by communal stand-offs, anger and hatred.
 - More civilians, militants and security forces have died in the first five months of 2018 than in corresponding periods for the previous decade.
 - **In the Valley, alienation from India is as high as it was in the early 1990s, when insurgency took root.**

Why it needs a fresh strategy :-

- **Focus on investing in J&K's infrastructure:-**
 - The Kishanganga hydroelectric power plant, which will generate 330MW of electricity, the tunnel-cum-highway connecting Jammu and Srinagar and new-economy jobs for youth are what J&K needs.
- **Standard operating procedures** must require the use of lethal force only when there is an imminent threat to life and property, force should be used proportionately and not as a punitive measure.
- **India can consider an approach taken by the British in Northern Ireland.** This strategy involved operating within the framework of law, avoiding torture, illegal killing and arbitrary punishment. Though there were excesses, by and large the British stuck to the policy that has led to sustainable peace in the region.
- It is that much more obligatory on India's part to conduct operations within the ambit of the law and through the use of discriminate and proportionate force.
- What is needed at the moment is the **deployment of new socio-cultural resources, and a new operational culture to wind down the militancy** without alienating more locals who could either join or influence their relatives and friends to join various terrorist organisations.
- **Lethal force should be the last resort**, used only when lives are threatened. Promptly investigating allegations of abuses and prosecuting those responsible is key to resolving this mess.
- The 2000's ceasefire experience also showed that casualties among the security forces could have been minimised had **more urgent attention been paid to tightening defence of security installations and personnel.** **This needs to be looked into now.**
- **Externally, wide-ranging peace talks between India and Pakistan**, the Indian administration and 'azaadi' groups is needed and **internally, peace-building on the ground by multiple stakeholders involved is necessary.**



Topic– Challenges to internal security

Q) India's defence production is closely linked to DRDO's fate. Discuss and critically examine the recent steps taken by government to bolster DRDO's performance? (250 words)

Financial express

Why this question

The article talks about the challenges being faced by DRDO, summarising the report of Parliamentary Committee regarding the functioning of DRDO. One of the focus areas of the current government is the emphasis on enhancing defence production and hence this article is important.

Key demand of the question

The question expects us to assess the status of defence production in India and the performance of DRDO in this regard. We need to point out the achievements of DRDO on how it has helped India develop defence equipments and also evaluate its weaknesses. It asks us to critically examine whether giving financial autonomy to DRDO would address the lacuna in its functioning.

Directive word

Discuss – Highlight the debate with respect to the performance of DRDO

Critically examine – Highlight the pros and cons of granting greater financial autonomy to DRDO.

Structure of the answer

Introduction – *Bring out the focus of government on enhancing defence production and the role of DRDO in the same.*

Body

- *Bring out the achievement and weaknesses of DRDO which have an impact on the defence production of India.*
- *To bolster your arguments, take help of reports like the recent parliamentary committee findings, Rama Rao committee etc*
- *Thereafter examine whether financial autonomy would address the weaknesses highlighted above. Highlight both pros and cons*

Conclusion – *Discuss the importance of being holistic reforms in functioning of DRDO and the way forward.*

Background:-

- Today India is the largest arms importer in the world and spends annually on an average about \$3.6 billion, which is more than the combined imports of both Pakistan and China.
- **Role of DRDO:-**
 - Defence Research and Development Organisation (DRDO) comes across as formidable. It is currently engaged in about 70 projects that include making almost every major conventional weapon system and platform that major military powers are already manufacturing. From rifles and machine guns to tanks, fighter aircraft, airborne warning and control system, aircraft carrier and a wide array of missiles—surface-to-air, surface-to-surface and sub surface.
 - DRDO has 52 labs across all domains of defence for R&D in defence related requirements and has played an important part in new technology development in the country.

Success of DRDO:-

- Successful flight trials of indigenously developed **first long range sub-sonic cruise missile Nirbhay, Quick Reaction Surface-to-Air Missile (QRSAM) and supersonic cruise missile BrahMos from fighter jet Sukhoi-30 MKI besides dedicating Naval submarine INS Kalvari** to the Nation were highlights of the last year.



- Nirbhay, country's first indigenously designed and developed cruise missile, achieved grand success during fifth trial saving the project from being scrapped after three failures and one partial success.
- DRDO also conducted three successful flight tests of its newly developed short range QRSAM. QRSAM is a highly mobile air defence system which can destroy multiple targets at a distance of 25 km.
- The third generation 'fire and forget' Anti Tank Guided Missile (ATGM) Nag has also completed developmental trials paving the way for its induction in the armed forces.

Criticism:-

- **Delay in completion of projects:-**
 - Defence Research and Development Organisation (DRDO), the country's premiere defence research body, has come under fire of a parliamentary panel recently over delay in completion of key military projects (including the Light Combat Aircraft Tejas programme and Airborne Early Warning and Control System programme) which has posed a major challenge to the Indian armed forces modernisation.
 - The panel criticized that delays in completion of projects is a part and parcel of DRDOs functioning
- **High defence imports:-**
 - India continues to be the world's largest defence equipment importer while DRDO has been pumping resources into less critical projects or not core technologies like developing dental implants and mosquito repellents.
- LCA project was originally supposed to be completed by 2008, but, the date of completion has now been revised to June 2019. Similarly, the Kaveri aero engine project was supposed to be completed by 1996, but was only completed by 2009. **Such delays not only have a cost implication, but also keep the armed forces waiting for critical capabilities.**
- **Lack of funding:-**
 - It is also hobbled by lack of adequate funding as it receives just 5-6% of the defence budget, while the comparable figure for China is 20%.
- **No innovation:-**
 - DRDO works on projects such as the Tejas fighter, unmanned aerial vehicles, warship systems, artillery guns, the Arjun tank etc **all constitute equipment that has been in service worldwide for decades.**
 - It is yet to graduate to making complete weapon systems or highly sophisticated technologies as is the case with major defence companies in the US and Europe.
- **Exports:-**
 - India's record of producing and exporting weapon systems is extremely modest. For example, India's defence exports averaged a meagre US\$88 million a year between 2006-07 and 2008-09, which marginally rose to \$174 million in 2013-14 and \$330 million in 2016.
 - **None of the technologies India export are critical technologies or anywhere close to a complete weapon system or a weapon platform.**
- **Internal criticism** against the military-industrial complex **range from :-**
 - **The way the DRDO is conceptualised and structured, its tendency to over reach, technological limitations and incapability; coordination problems with, and changing specifications by, the users, the myriad responsibilities of the head of the DRDO.**
 - The continuing limited involvement of the private sector and the predominant role of generalist bureaucrats with no expertise in defence.
- Moreover, the **bureaucratisation of Indian science** has created a scientific-work environment with features comprising caution, rules, reviews, screenings, scrutinies, committees, controls, centralisation, delays, doubts, indecision, inaction, suspicion, friction, and less communication.



Recent steps taken by the government:-

- In 2014, centre had suggested **DRDO empower younger scientists**, starting with manning five of its 52 laboratories exclusively with scientists under 35 years of age.
- To **enhance its (DRDO's) efficiency and effectiveness**, the defence ministry has reposed greater decision-making powers with the members of DRDO.
 - The DRDO chief can now sanction projects/procurements up to Rs 150 crore while the DGs can sanction projects up to Rs 75 crore
- Government has reserved projects under 3 crores for MSMEs where DRDO can mentor.
- **Two unprecedented decisions** that were specifically aimed at facilitating the self-reliance process
 - (a) opening of the military-industrial complex to Indian private sector participation up to hundred per cent
 - (b) opening up to foreign direct investment (FDI) permissible up to 26%, which was subsequently increased to 49% in 2014 and 100% in 2016.

Pros:-

- Centre devolving greater financial power to the Defence Research and Development Organisation (DRDO) will perhaps give the body some much-needed autonomy.
- Ministry of defence has to be lauded for its proposed move not to make any further investments in the state-owned defence production sector which has, over the years, become a drag on the economy

Cons:-

- **India's self-reliance continues to hover at 30% to 35%** despite a series of measures taken by the government that has resulted in India continuing to remain overly import dependent for its defence requirements.
- The **procurement process continues to be time consuming** and the private industry remains mired in bureaucratic processes. Most of the private industry's involvement currently is low scale and focused on making sub systems.
- The **defence ministry has now shifted its deadline to attain about 70% self-reliance by over two decades to 2027.**
- Till now the Government has lacked the political will to restructure and reform the defence industry and thereby incurs a huge defence bill which affects both armament modernisation and maintenance of its military inventory.

Way forward:-

- The Rama Rao Committee, in 2008, had asked the government to limit the DRDO's research focus to just core technologies of strategic importance.
- **Parliamentary committee:-**
 - Defence Research and Development Organisation needs to undertake research oriented programmes with great concern and care. The Committee desires that at the initial stage itself, before the project is sanctioned, all the possible constraints and bottlenecks that are likely to arise need to be assessed with care.
 - The panel, in fact, suggested that independent agencies be brought in to conduct scientific, technical and concurrent audit(s) of every ongoing project.
 - The Committee also strongly feel that the Ministry should re-evaluate the reasons and also seek expert advice before taking a decision towards closing down any project of DRDO in future so as to avoid wastage of public funds and to help in sustaining the project(s), which can possibly prove to be beneficial to the country.
- **International lessons:-**
 - **The Government needs to look at two successful global models for a winning formula.**
 - The US Defense Advanced Research Projects Agency (DARPA) has a team of only 240 scientists who run all its R&D activities through funds provided to academic institutions and private industry.



- In Israel there are wholly state-owned ordnance factories, public-private partnership defence companies and completely private defence companies that undertake both R&D and defence production.

Conclusion:-

- It is both an economic necessity as well as a national security imperative to reduce India's annual average defence import bill and become self-reliant in defence technologies. This will benefit the country's economy especially its manufacturing industry.