



**INSIGHTSIAS**

SIMPLIFYING IAS EXAM PREPARATION

# **Insights into Yojana: December 2018**

**Digital India**

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## Towards the inclusive and Empowered Nation

### Introduction

- Digital India aimed to empower the poor and underprivileged by using technology that is affordable, developmental and inclusive. **Inclusive growth and empowerment of ordinary Indians is core of Digital India.**
- Today, India is recognized in the world for its thriving IT industry that is present in more than 200 cities of 80 countries.
- In the year 2017-18 the total revenues of India's IT industry was \$167 billion and the exports made were to the tune of \$125 billion.
- Under Digital India Programme, various initiatives have been undertaken towards providing digital identities, creating digital infrastructure, enabling digital delivery of services and promoting employment and entrepreneurial opportunities that has transformed India into a **digitally empowered society** while bringing significant change in the lives of citizens.

### Digital identity

- Digital identity is the key to unlock access and potential of the Digital India Programme.
- Aadhaar has provided a digital identity to supplement the physical identity of individuals for delivery of various social welfare programmes and enabled portability.
- It has curbed leakages and corrupt practices from the public welfare delivery mechanism.
- The **Supreme Court**, in its historic judgment on Aadhaar, has not only **upheld the Constitutional validity of Aadhaar** but also described it as a tool for empowerment of poor people.

### Bharat Net

- Bharat Net aims to provide high speed internet in rural areas of India by building optical fibre network connecting all the 2.50 lakh Gram Panchayats of India.

### National Knowledge Network

- National Knowledge Network (NKN) is a state-of-the-art network to promote collaboration and exchange of knowledge among educational and research institutions.

### GI Cloud (Meghraj)

- In order to utilize and harness the benefits of **Cloud Computing**, this initiative aims to accelerate delivery of e-services in the country while optimizing ICT spending of the Government.
- This has ensured optimum utilization of the infrastructure and speed up the development and deployment of eGov applications.

### eSign

- **eSign Electronic Signature Service** is an innovative initiative for allowing easy, efficient, and secure signing of electronic documents by authenticating signer using e-KYC services.

### Digital India for Better Governance

- **JAM (Jan Dhan- Aadhaar –Mobile) Trinity for Direct Benefit Transfers (DBT)** –
  - The combination of Jandhan bank accounts, mobile phones and digital identity through Aadhaar is helping the poor receive the benefits directly into their bank accounts.
  - Financial entitlements under 434 Government schemes are being delivered through Direct Benefit Transfers.

- This has not only **enhanced efficiency of service delivery** mechanism but also **eliminated leakages and curbed corruption**.
- **Digital payments –**
  - Over the past four years digital payment transactions have grown multifold.
  - Today **BHIM-UPI (Unified Payment Interface) Platform and RuPay debit cards** have become very popular digital payment instruments.
- **UMANG**
  - It has put the power of governance in the hands of common people. It is a single mobile app that offers more than 307 government services.
- **Digital Delivery of Services- Some of these popular digital services are**
  - **National Scholarship Portal** has become a one stop shop for all the scholarship needs of students.
  - **Jeevan Pramaan** for the ease of verification of pensioners using Aadhaar digital identity.
  - **eNAM** Electronic National Agriculture Market (eNAM) is a pan-India electronic trading portal which networks the existing Agriculture Produce Marketing Committee (APMC) Mandis to create unified national market for agricultural commodities.
  - **DigiLocker** It is now possible to eliminate the need to carry any paper to avail a government services. Various important documents like PAN card, driving license, Aadhaar etc. can be stored in digital form on DigiLocker.
  - **eCourts:** With eCourts mobile app and portal it has become easy to keep a track of case status of cases going on in different courts across India.
  - **National Judicial Data Grid:** It provides information on cases pending, cases disposed and cases filed in both High Court and District Court complexes in the areas of civil and criminal cases.
  - **GeM:** Government eMarketplace (GeM) is a transparent online market place for government procurements. This has not only brought transparency in Government procurements but has also created opportunities for micro, small and medium enterprises to sell their products to Government departments and PSUs.

### Digital Service delivery near door-step (Common Services Centres)

- A vast network of digital services delivery centres, spread across 2.10 lakh Gram Panchayats of the country has been created to provide access to digital services especially in rural areas at an affordable cost.
- These centres have also led to empowerment of marginalized sections of the society by creating jobs and by promoting rural entrepreneurs.
- CSCs have also undertaken the **Stree Swabhiman initiative** to create awareness about menstrual health and hygiene among rural women.
- Under this initiative, more than 300 micro sanitary pad manufacturing units have been opened in rural areas. These units have not only provided livelihood opportunity to rural women but have also made low cost sanitary pads locally available.

### Digital literacy for the Masses

- In line with the objective to make one person e-literate in every household in the country, two schemes were launched viz. **National Digital Literacy Mission (NDLM) and DISHA**.
- Government has approved a new scheme **“Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA)”** to usher in digital literacy in rural India. This is the largest digital literacy mission of the world.

### **BPO Promotion in Small Towns**

- To create employment opportunities for local youth and secure balanced regional growth of Information Technology and IT enabled Services (IT/ITES) Sector in each State, **India BPO Promotion Scheme and North East BPO Promotion Scheme** have been launched under Digital India Programme

### **Cyber Security:**

- To create an inclusive, safe and secure cyber space for sustainable development, the **Cyber Swachhta Kendra (Botnet Clearing and malware analysis centre)** has been set up to provide alerts to users for preventing losses of financial and other data. The centre is providing facility to clean botnets in realtime.

### **Way Forward**

- In the **21<sup>st</sup> century, Digital Economy has emerged as a key driver for global economic growth** and will also effectively address common global challenges including energy, environment and inequality.
- Digital technologies offer new opportunities for businesses, workers and citizens to engage in economic activity and to enhance efficiency.
- Concerned efforts to facilitate and promote process of digitization including upgrading digital infrastructure, promoting electronics manufacturing, developing capacity to harness emerging technologies and strengthening cyber security has the **potential to create a trillion dollar digital economy by 2025.**

### **Questions:**

- 1. Write a note on the National Agricultural Market (NAM) platform. In what ways can Digital India program along with NAM help farmers? Examine.**
- 2. “At its heart, Digital India is an ambitious vision that has the potential to be an equaliser for Indians by driving inclusive growth for the economy.” Do you agree with this view? Critically analyse.**
- 3. Bridging the gender gap in mobile ownership and digital literacy in India will hasten women empowerment and help transform their lives. Comment.**
- 4. Which of the following are incorrect?**
  - a) MeghRaj – Cloud Computing at National Level**
  - b) e-Taal – e-transaction analysis of central and state level e-governance projects**
  - c) National Informatics Centre (NIC) – established in 1976**
  - d) UMANG– verification of pensioners using Aadhaar digital identity**

**Solution: d)**

## Regulating the digital Revolution

### Introduction

- The digital revolution is often called as the **Fourth Industrial Revolution**. World over, the Digital Revolution is driving the Socio-economic and technological growth of the human race.
- It would be pertinent to note that the mode of communication has transformed from purely Analog to Digital now and mobile communication has become an inseparable part of our lives.
- The entire gamut of Digital Transformation is to provide innovative products and services to improve productivity and efficiency.

### Challenges:

- During the past two decades, the world has witnessed an unprecedented growth in technology. The advancement in technology has posed new challenges in the regulatory environment.
- A major portion of the Applications and services that are being developed are based on the mobile connectivity, hence the **role of Telecom service providers as well as the Regulator becomes more and more challenging**.
- The regulators have the onerous responsibility of maintaining a balance between encouraging innovation, protecting consumers, creating an environment for orderly growth of industry as well as address unintended consequences of disruptions.
- The world is witnessing emerging technologies like Artificial Intelligence, Internet of Things (IoT), Machine Learning (ML), Machine to Machine (M2M) Communications, Big Data Analytics, Distributed Ledger Technologies (Block chain) etc.
- The Regulator today can no longer afford to be lagging in the technology development curve.
- The challenges faced by the tradition regulation can be broadly classified into:
- **Business challenges:**
  - These could be the pacing problem i.e a slow pace of regulations may become irrelevant very soon while a regulation released early may discourage innovation.
- **Technological challenges:**
  - These are far too many and are dynamic in nature i.e issues related to Data, Digital privacy and Security, Data ownership, AI-based challenges etc.

### Way Forward

- India is the second largest market in the world. Though a large number of initiatives have been undertaken both by the Government as well as the private sector but still a large population remains devoid of connectivity to the internet.
- As new business models and services emerge, Government agencies are expected to create or modify regulations, enforce them and communicate the same to the environment at faster pace.
- Based on the emerging technologies, a Regulator therefore may have to consider the following approaches while formulating the regulations today:
  - **Regulations should be adaptive:** A rigid regulatory framework may prove to be detrimental to innovation as well as the growth of industry. An adaptive regulatory regime would foster innovation, provide a platform for the industry to grow, enhance user satisfaction, provide consumer protection and help the government to regulate.
  - **Impact assessment of regulation** on the technologies may be studied before issuing the Regulations.
  - Services and products today may require regulation by multiple regulatory bodies; hence a **collaborative Regulatory approach** would have to be adopted.

- A Regulator, therefore, has to be aware of the current state of regulations world over, Know the right time to regulate, know the right approach to regulate and have an **adaptive approach towards emerging technologies**.

### Conclusion:

- The **Telecom Sector is witnessing the Biggest transformation** in the past several decades, New technologies and services based on mobile connectivity, social media, data analytics, cloud computing etc. are being designed today.
- These technologies and services have blurred geographical boundaries, creating excited business models, created job opportunities, empowered the citizens and attracted world telecom leaders to India.
- TRAI has a very important role today in not only regulating the Digital revolution in the telecom sector but also be a front-runner in adaptively regulating emerging technologies.

### Questions:

**1. Having missed the first three industrial revolutions, India is now in a position to lead the fourth. Comment.**

**2. Increasingly, India is being seen as a pioneer in digital technologies. This rapid pace of transformation has raised larger questions around inclusion, data protection and privacy. Discuss these larger questions and their solutions.**

**3. 'FIEO GlobalLinker' is a digital platform associated with**

- a) MSME Industries
- b) Startups
- c) The international legal fraternity
- d) Stock Exchange

**Solution: a)**

**It is a digital platform for MSME exporters.**

**The Federation of Indian Export Organisations GlobalLinker has been set up with a view to make the business growth of SMEs simpler and more profitable.**

**4. BRICS 'PartNIR' will be a partnership that will focus on**

- a) Maximising the opportunities arising from the fourth industrial revolution.
- b) Democratisation of the United Nations.
- c) Building a new world order that accords equal value to every nation – whether belonging to the global south or the north.
- d) Institutionalisation of the BRICS-Plus mechanism.

**Solution: a)**

**PartNIR aims at deepening BRICS cooperation in digitalisation, industrialisation, innovation, inclusiveness and investment, to maximise the opportunities and address the challenges arising from the 4th Industrial Revolution.**



## Secure Digital India

### Introduction

- As India heads towards becoming a trillion dollar digital economy, it becomes imperative to take a look at the different dimensions which have been spawned their implications for the country and its citizens, the associated concerns that emanate from this phenomenon and most importantly the efforts that are essential to making the ecosystem safe and secure.
- Some of the key indicators of digitization- internet penetration, availability of Smartphones, government services online, and a number of devices that are getting connected with the internet, all these are on the upward curve and clearly demonstrate and reinforce **India's growing digital foot print**.

### Concerns of digital space

- The path to digitization is resulting in massive volumes of data getting digitized and infrastructure and applications becoming exposed to internet and inter connected to each other, which, apart from opening new and better avenues also engender the **cyber security risk**.
- Never before encountered and unanticipated threat scenarios are emerging and confronting the industry today and taking a toll in the form of **business risks, reputational damage, disruption of services and potentially public safety hazards**.
- Across the board industry sectors are encountering these **vicious cyber- attacks**.
- Cyberspace is now the fifth domain of warfare. The **World Economic Forum 2018 Risk report** called out **Cyber Risk as one of the top three risks** along with environmental disasters.
- **Tracking cyber criminals and bringing them to justice** is increasingly difficult owing to challenges in collection of evidence, applicability of laws, jurisdiction issues, and ineffective International frameworks to address Cyber-crimes.
- Government- Industry Partnership within India, and collaboration with global stakeholders is an imminent priority to address the cyber challenge.

### Addressing cyber security concerns

- The cyber security challenge we face needs serious attention of all stakeholders, especially Industry and Government.
- The two, along with other key entities including Sectoral Regulators and National Cyber Security machinery need to partner and devise institutional arrangements to respond to challenges and enable better preparedness to withstand/ counter attacks.
- Some of the measures are:
- **Policy and regulatory response to drive sectors and entities to cyber security preparedness.**
  - The cyber security Frameworks by RBI, IRDAI for Banking and Insurance sectors are steps in this direction.
  - But we need **strong enforcement** of these frameworks and similar focus in other sectors of Critical Infrastructure including Healthcare.
- **Coordination and collaboration for collective defence and quick response.**
  - Need for sectoral CERTS end state level CERTs to bolster the efforts of national CERT.
  - Beefing up capability of Law Enforcement, Judiciary to bring cyber criminals to justice, and forge necessary government to government and bilateral, multi-lateral collaborations for speedy investigations and concerted international effort.
- **Cyber Security Preparedness in India including large enterprises, SMBs and PSUs needs to be stepped up**

- Micro and small Enterprises are rapidly going online, and face severe cyber risk.
- **Digital Literacy and Cyber Security Awareness** and adopting safe and secure practices online and in their digital payment transactions is a key priority for India.
- As India is going on the fast lane of harnessing emerging digital Technologies to accelerate its economy, attention to and angle Investments in cyber security, both from a technology and institutional, manpower capabilities is now a national priority, probably as paramount as Military and Para-Military forces.

### Questions:

1. Discuss the nature of cyber security threats faced by financial services and infrastructure needed to thwart such attacks.
2. There has been steady and accelerating increase in the recorded cases of breach of cyber security in India. To address this issue, what are the most important steps that India must take? Discuss.
3. The National Digital Communications Policy 2018 aims to
  1. Provide 10Gbps connectivity to all Gram Panchayats by 2022.
  2. Provide universal broadband connectivity at 50Mbps to every citizen.
  3. Expand Internet of Technology ecosystem to 5 billion connected devices.

Select the correct answer using the code given below:

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

**Solution: d)**

The policy aims to

- Provide universal broadband connectivity at 50 Mbps to every citizen;
- Provide 1 Gbps connectivity to all Gram Panchayats by 2020 and 10 Gbps by 2022;
- Ensure connectivity to all uncovered areas;
- Attract investments of USD 100 billion in the Digital Communications Sector;
- Train one million manpower for building New Age Skill;
- Expand IoT ecosystem to 5 billion connected devices;
- Establish a comprehensive data protection regime for digital communications that safeguards the privacy, autonomy and choice of individuals
- Facilitate India's effective participation in the global digital economy;
- Enforce accountability through appropriate institutional mechanisms to assure citizens of safe and
- Secure digital communications infrastructure and services.

## Transformative impact of Digital India

### Introduction

- The story of India's Digital journey has been one of transformation and inclusion. Technology has been intrinsic in this transformative evolution by enhancing transparency, inclusion, productivity and efficiency.
- The initiatives under Digital India, coupled with evolving technology, have led India to become a land of vast possibilities, where hope and talent meet opportunities digitally.

### Utilising Technology

- India is among the top countries of the world that have effectively utilised Technology and innovation to transform the governance Outlook from government-centric to citizen-centric, where e-services are targeted towards creation of an environment of empowering citizens through participatory governance, and engaging them in decision-making and formulation of government policies, programmes, regulations, etc.
- The remarkable increase in digital adoption is evident in the improvement in India's position in **United Nation's E-Government index 2018** that highlights that India's relative capabilities of utilizing ICT for governance have improved relatively faster than the entire Asia region.
- There have been significant improvements in **UN-Online Service Index**. There has been a consistent growth in **e-participation index**.
- The robust citizen engagement platform 'MyGov', in true spirit of participative democracy, has been developed and implemented.
- Having built a strong foundation of digital infrastructure and expanded digital access, India is now poised for the next phase of growth- the creation of tremendous economic value and the empowerment of millions of Indians as new digital applications permeate sector after sector.
- The citizens of the country have been given a **Digital Identity through Aadhaar** and more than 122 crore residents have already been covered.
- Aadhaar has been seeded with several databases like Liquid Petroleum Gas (LPG), Public Distribution System (PDS), National Social Assistance Programme (NSAP) etc. To enable correct identification of the beneficiary and ensure that the benefits reach the beneficiary promptly and directly.
- India has moved up the ladder of digital adoption with the multi-fold growth in digital payment transaction
- Now, DBT is using the digital payment technology to transfer the benefits/ subsidies directly to the accounts of people

### Digital Developing Service

- Digital India has changed the landscape of delivery of service and governance. The **Common Services Centres (CSCs) are ICT enabled rural enterprises** in the country and provide plethora of services at the door steps of the citizens.
- They have also become a major employer of rural youth through village level entrepreneurship leading towards an empowered and a digitally inclusive society, thus bridging the digital divide.
- Digital transformation is an ongoing process to engage, enable, empower and sustain people on their digital Journeys.
- Towards this, **DigiLocker** has enabled people to store, share and verify their documents and certificates through cloud.
- **National Scholarship Portal** has become a source of facilitating education.

- **Online Registration System (ORS) and e-Hospital** how facilitated Aadhaar based online registration and appointment for patients, reduced tiring queues in hospitals for appointments and enabled health information management system.
- **Jeevan Pramaan**, Provides the ease to pensioners to generate their Digital Life Certificate at home, bank, CSC centre, government office etc. Using Aadhaar biometric authentication.
- To sustain the people throughout their digital journey, a **Unified Mobile Application for New Age Governance (UMANG)** has been launched. It has brought government services to the fingertips of the citizens of India. It is a single mobile app that offers more than 307 government services

## Government e-Marketplace (GeM)

- To address the challenges in public procurements, Government e-Marketplace (GeM) was launched.
- GeM provides an online Marketplace for public procurement for both goods and services. It has made lives of sellers to Government extremely simple by eliminating physical meeting of Government Buyers and brought transparency.
- The growth of buyers and sellers on GeM is indicative of its use and ease of selling on the portal.

## Job Creation

- In order to sustain a decent standard of living, employment is fundamental.
- In this direction the Government of India has taken significant initiatives in the area of **Electronics Manufacturing, BPO Promotion, IT-ITeS etc.** Indian start-ups are already developing to take advantage of the humongous potential created through this transformation.
- With the ever changing digital economy, the skill set of the people also have to be continuously improved and enhanced for adaptation. Hence the quest to promote digital literacy and future skilling is off utmost importance. **Pradhan Mantri Gramin Saksharta Abhiyan (PMGDISHA)** aims to make 6 crore people digital literate.
- The sustainability of the digital economy rests upon its resilience and security. The **Cyber Swachhta Kendra** (Botnet clearing and malware analysis centre) has been set up to provide alerts to users for preventing losses of financial and other data.
- The new and emerging technologies are significantly disrupting and changing the processes in critical sectors like agriculture, education, health etc. Deployment of these technologies has a potential to create immense value and change the dynamics and delivery models for these sectors.

## Conclusion:

- India is at a tipping point where robust foundation of Digital India and increased access to information and Services are enabling India to optimally harness digital technologies in the core of economic and social sectors, leading to \$ 1 trillion Digital Economy while sustaining 55-60 million jobs by 2025.
- This would lead to the **New India** not just for economic transformation but for social transformation as well. By focusing on inclusion, empowerment and bridging of the digital divide.

## Questions:

**1. Technology is reshaping the way government is designing and implementing programmes in India. Discuss. (250 words)**

**2. Consider the following statements about Common Service Centres (CSCs):**

1. The CSC programme is a joint initiative of the Ministries of Rural Development and Panchayati Raj

2. The central government recently proposed to enable all CSCs to operate as business correspondents of banks

3. To become a Village Level Entrepreneur, the applicant must be fluent in the local dialect only  
Which of the statements given above is/are correct?

- a) 1 and 2 only
- b) 2 only
- c) 1 and 3 only
- d) 1, 2 and 3

**Solution: b)**

Common Services Centre (CSC) programme is an initiative of the Ministry of Electronics & IT (MeitY), Government of India. CSCs are the access points for delivery of various electronic services to villages in India, thereby contributing to a digitally and financially inclusive society.

Some of the preconditions for participating in the CSC scheme:

- Applicant should be a village youth above 18 years of age
- Applicant must have passed the 10th level examination from a recognized board as minimum level of educational qualification.
- Applicant should be fluent in reading and writing the local dialect and should also have basic knowledge of English language
- Applicant should have a valid Aadhaar number.

## Electronic Manufacturing: Scope and Future in India

- Electronics Industry is one of the largest and fastest growing industries in the world. It is finding increasing applications in almost all sectors of the economy.
- The demand for electronics hardware products has been growing at a rapid pace in India which is driven majorly due to increase in demand for mobile handsets and smart phones amongst other consumer electronics, IT hardware products etc.
- While majority of the domestic market requirements related to electronics products are met through imported goods majorly sourced from China, however, manufacturing activity related to mobile handsets and its components eco-system has been growing at a rapid pace during the past 3-4 years
- **The Government of India attaches high priority to promote electronics manufacturing in the country under “Make in India” and “Digital India” flagship programs.**
- Over 120 new manufacturing units have been established across the country during the past 3-4 years generating employment for 4.5 lakhs combining both direct and indirect employment.
- **Mobile handset and its components manufacturing eco-system is considered to be the Champion product category under the “Make in India” flagship program.**
- During 2017-18 India has overtaken Vietnam to become the 2<sup>nd</sup> largest mobile handset production geography after China. This is considered to be a major achievement for the industry and the Government.
- **Some of the policy interventions undertaken by the Government of India during the past 3-4 years**
  - Robust **differential duty structure** which was made applicable on mobile handsets vide Budget 2015 **encouraging domestic manufacture** of handsets vis-à-vis imports of handsets
  - Implementations of the **phased manufacturing Program (PMP)** to encourage indigenization of components of handsets.
  - **Draft National Policy on Electronics 2018** currently under consultation process.
  - **Effective outreach initiatives** jointly undertaken by Government of India and major Industry Associations (India Cellular) to important geographies such as China, Taiwan, Japan, USA, Korea, Germany etc
  - **Investment friendly policy framework** adopted by various state Governments such as AP, Telangana, UP, Haryana etc.
  - Establishment of the **Fast Track Task Force (FTTF)** by the Ministry of Electronics and IT (MeitY) to “re-establish and catalyse significant growth in mobile handset and components manufacturing eco-system in India”
- There is a Mega opportunity potential which India can galvanize to become a global manufacturing power house for mobile handset eco-system and electronics overall during the next decade.
- It is imperative that **promotion of electronics manufacturing eco-system must be given the highest thrust area** and the Government must undertake all possible measures to help establish this sector on a prioritized manner.
- Considering the tremendous potential that this sector holds in terms of significant employment generation, ability to transform socio-economic identity of citizens, contributions in the upliftment of the economy, value addition, forex savings etc., all regulatory framework/ incentivisation policies to be adopted and implemented for future must be suitably calibrated to be export focused.
- Riding on successes achieved in the mobile handset manufacturing eco-system, the Government of India must replicate similar success stories in the entire electronics vertical with a special focus on

developing manufacturing eco-system in medical electronics, consumer electronics, technologies such as IoT, sensors, agricultural electronics etc.

### **Questions:**

- 1. A number of factors have been contributing towards the growth of the Electronics Sector in India. Discuss. Also highlight the efforts of the government to make India a global hub for electronics manufacturing.**
- 2. India's electronics manufacturing has been unable to respond to the rising demand, increasing the import bill while the country loses an opportunity to create employment for millions. Discuss the causes and remedies.**

## Technology areas for Indian languages

### Introduction

- Language Technology has reached a level of maturity today where it is making mass impact on users of English and many other languages of the world.
- **Indian language Technology can enable people to access material in their own languages**, for example, material in English and other Indian languages can be translated automatically.
- Similarly computers can read out information to the illiterate or blind through text-to-speech systems, remote data can become accessible through telephonic speech interfaces, sophisticated search can be provided to the internet, digitally scanned books and other material can be made more accessible by using optical character readers.

### Localization

- Localization in our context means that the electronic device is enabled with Indian languages using the standards. For example, when one buys a phone, it should already have the language of the region build into it along with Hindi and English, for displaying, key-boarding etc.
- Use of standards is most important. This ensures that the data created on one device is usable (displayable, editable, processable etc.) on any other electronic device.
- If one sends a message created on one device to a user on another device, it should be displayable on it.
- Prime among them is the use of Unicode, for representation across devices, and the standard input (e.g., keyboard) so that the user does not have to learn a new method (e.g., keyboard layout) every time he uses a different electronic device.

### Creating e-Content in Indian Languages

- While e-content is not a replacement for books, the young generation has started placing increasing Reliance on the content available over the internet.
- It was observed in Germany not so long ago (around The Year 2000), that the German youth were accessing English language content much more than the German language content. It was realized that this situation had arisen because there was not sufficient content in German on the internet.
- In India, where a large number of people know an Indian language but not English, it is even more important to create large amount of e-content in all Indian languages.
- e- Content in ILs can be created rapidly, in the short term, through translation of English content; but in the long term, it should be created originally in the Indian languages.

### Automatic Machine Translation (MT)

- Automatic machine translation (AM) translates a given text in one language to another, instantly.
- Translation from English to/from Indian languages has lower quality, as expected, because English is linguistically distant from Indian languages.
- MT systems for Indian languages are available and produce good quality translation.
- Deployment of systems for the language pairs which are ready, take place within a year.
- MT systems are available for about a dozen Indian languages, and need to be developed for all 22 scheduled Indian languages
- Technology Framework is fully developed and a new language pair can be added easily and rapidly, in a matter of 2 years

### Speech processing:

- There are two parts to this technology:



- Text-to-speech (TTS), and
- Speech-to-text (ASR) systems
- TTS can be used to allow a text file to be accessed by a blind person or an illiterate person. It can also allow interaction over the telephone, where the text cannot be seen by the user. TTS is a mature Technology and is available for more than a dozen ILs.
- ASR (automatic speech recognition) is important where the computer has to understand a spoken command in a language, and the needful has to be done in response to the user request.

### Conclusion

- There is a large amount of content in English but not in Indian languages. Hence, there is a large unserved need!
- Indian language Technology should immediately be deployed to translate all Central Government websites into 22 Indian languages. This will help growth of an eco-system of academic institutions as Researchers and Technology developers, start-ups as Technology maintainers and others who service the demand using MT technology.
- The National Digital Library of India should use services of an OCR for indexing the Candid images in Indian languages, in making them searchable.

### Questions:

**1. A comprehensive protection of traditional knowledge in India can be secured only through a multipronged approach. Discuss.**

## Digital Library in India

### Introduction

- Digital technology and internet connectivity lead to evolution of the traditional library to digital library.
- The concept of digital libraries in India began in the mid 1990s with the spread of information technology, the internet and the support of the Central Government.
- Digital Libraries have the ability to enhance access to information and knowledge. They also bridge barriers of time and space.

### Digitization of Libraries – Few Initiatives:

- **Digital Library of India (DLI)**
  - Digital Library of India (DLI) is a digital collection of freely accessible rare books collected from various libraries in India. DLI project started in early 2000 with the vision **to archive all the significant literary, artistic and scientific works** of mankind and to preserve digitally and make them available freely for every one over Internet for education, study, appreciation and for future generations.
- **Information and Library Network (INFLIBNET):**
  - INFLIBNET is involved in **modernizing university libraries in India** and connecting them as well as information centres in the country through a nation-wide high speed data network using the state-of-the-art technologies for the optimum utilization of information.
- **Shodhganga: A Reservoir of Indian Theses:**
  - “Shodhganga” is the name coined to denote **digital repository of Indian Electronic Theses and Dissertations** set-up by the INFLIBNET Centre.
- **Shodh Gangotri: Indian Research in Progress:**
  - Shodhgangotri is a new initiative that compliments “ShodhGanga”. While “ShodhGanga” is a repository of full-text theses submitted to universities in India, Shodhgangotri hosts synopsis of research topics submitted to the universities in India by research scholars for registering themselves for the Ph.D programme.
- **National Digital Library (NDL):**
  - Ministry of Human Resource Development, under its **National Mission on Education through Information and Communication Technology (NMEICT)**, has entrusted IIT Kharagpur to host, coordinate and set-up the National Digital Library (NDL) towards building a national asset.
  - The objective of the project is to integrate all the existing digitized and digital contents available with different institutions. More specifically, it is to provide a single window access with e-learning facility to different groups of users ranging from primary to higher education.

### Conclusion

- Digital libraries provide an effective means to distribute learning resources to students and other users. Rapid advances in information technologies have revolutionized the role of libraries.
- There are 1,24,500 secondary schools and over 11 lakh elementary schools in India. Indian higher education system is the largest in the world.
- Under this setting, India truly needs digitization of traditional libraries more and more for the growth and development in education and research.

## Facts for Prelims

### 'Global IT challenge for Youth with Disabilities 2018'

- A three day event-the “Global IT Challenge for Youth with Disabilities, 2018” was organised by the Department of Empowerment of Persons with Disabilities (DEPwD), Ministry of Social Justice and Empowerment.
- The objective of the global ICT challenge for Youth and Disabilities is to **leverage IT skills among youth with disabilities** and also to spread awareness about the application of Information and Computer Technology (ICT) in enhancing the quality of life of persons with disabilities especially in Asia-Pacific region.

### Report on the Vision Document for Digital North East 2022

- Digital North East is envisioned as an integral part of the **Digital India programme**, in leveraging the power of Information Technology to leapfrog the overall development of the region and realize its full potential.
- The Vision Statement for Digital North East India 2022 is, “Leverage digital technologies to transform lives of people of the North East India, enhance ease of living and ensure inclusive and sustainable growth”.
- The Document identifies **eight digital thrust areas** namely; Digital infrastructure, Digital services, Digital empowerment, Promotion of Electronic manufacturing, Promotion of IT and ITeS including BPOs, Digital payments, Innovation and Startups and Cyber security for realization of Digital North East 2022.
- The **major objectives** of the Vision Document for Digital North East 2022 include high speed broadband connectivity to all Gram Panchayats, mobile connectivity to uncovered villages of NER, creation of Cloud Hub with Disaster Recovery Centre, expansion of Common Services Centres, provide better access to quality health, education and agricultural services through digital technology, promote local tourism, art and culture, handicrafts, handloom, establish Start-up Hub in NER, promote entrepreneurship and employment opportunities in Electronics manufacturing, BPO, IT-ITeS industry etc.
- The Vision Document for Digital North East 2022 will not only **enhance the growth and development of the North eastern Region** but will also fulfill the goals of Digital India and will **accelerate progress towards a Trillion Dollar Digital Economy**.