

1. Directions for the following 4 (Four) items:

Read the following two passages and answer the items that follow the passages. Your answer to these items should be based on the passages only.

Passage 1

Universities today operate within a climate shaped by technological acceleration, social contestations and economic uncertainty. In such a context, higher education cannot remain limited to the orderly transmission of established knowledge. When pedagogy revolves largely around examinable fragments, learning may assume the form of retention rather than interpretation.

Intellectual formation, however, entails the ability to scrutinise assumptions, compare rival explanations and relate specific problems to broader conceptual settings. Academic institutions remain responsive to public expectations and institutional incentives, yet inquiry presupposes a degree of reflective distance. The character of higher learning is shaped not only by curricular content but also by the habits of thought it encourages.

Q. Which one of the following statements best reflects the central idea conveyed by the passage?

- A. Universities should modify their assessment frameworks.
- B. Higher education involves fostering reflective and analytical capacities beyond information retention.
- C. Institutional incentives significantly shape university functioning.
- D. Broad conceptual thinking has greater value than specialised knowledge.

◦ Correct Answer : B

◦ **Answer Justification :**

Option (a) is incorrect:

Assessment practices are mentioned indirectly, but altering assessment frameworks is not the principal focus. The passage addresses the broader orientation of learning.

Option (c) is incorrect:

Institutional incentives are acknowledged as contextual influences, yet they are not presented as the central concern of the discussion.

Option (d) is incorrect:

The passage does not rank broad conceptual thinking above specialised knowledge. It highlights the importance of cultivating interpretive and analytical habits.

Option (b) is correct:

The passage contrasts retention-based learning with scrutiny of assumptions, comparison of explanations and contextual understanding. These elements reflect an emphasis on reflective and analytical capacities in higher education.

2. Passage 1

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Q. With reference to the above passage, the following assumptions have been made:

- I. The expectations from higher education have evolved in response to changing societal conditions.
- II. Examination-oriented teaching may influence the depth of student engagement with knowledge.

◦ Which of the above assumptions is/are valid?

- A. I only
- B. II only
- C. Both I and II
- D. Neither I nor II

◦ Correct Answer : C

◦ **Answer Justification :**

Assumption I is valid:

The passage situates universities within technological, social and economic shifts, suggesting that expectations from higher education are shaped by changing conditions.

Assumption II is valid:

The discussion of pedagogy centred on examinable fragments implies that such an approach can affect how knowledge is experienced, potentially limiting interpretive engagement.

3. Passage 2

Disparities in demographic expansion are often accompanied by sharper imbalances in food allocation. As aggregate incomes increase, dietary preferences frequently shift toward greater consumption of livestock-based products. This transition redirects grains and legumes—capable of nourishing humans directly—into feed for poultry and large animals. The biological conversion embedded in this process is marked by notable caloric dissipation. Only a fraction of the energy contained in plant matter is recovered in edible animal products, with recovery ratios declining further in grain-fed large livestock.

Q. Which one of the following statements best captures the central concern of the passage?

- A. Economic growth influences dietary composition in many societies.
- B. Converting plant-based food into animal products involves substantial caloric loss.
- C. Livestock farming contributes significantly to demographic imbalances.
- D. Grain production remains adequate despite changing consumption patterns.

◦ Correct Answer : B

◦ **Answer Justification :**

Option (a) is incorrect:

The passage mentions income growth and dietary change, but this functions as background. The focus is on the inefficiency of caloric conversion.

Option (c) is incorrect:

Demographic imbalance is referenced initially, yet livestock farming is not identified as its primary driver.

Option (d) is incorrect:

The adequacy of grain production is not evaluated. The argument centres on utilization rather than supply sufficiency.

Option (b) is correct:

The passage highlights low recovery ratios when plant calories are routed through animals, indicating significant caloric loss in the conversion process.

4. Passage 1

Universities today operate within a climate shaped by technological acceleration, social contestations and economic uncertainty. In such a context, higher education cannot remain limited to the orderly transmission of established knowledge. When pedagogy revolves largely around examinable fragments, learning may assume the form of retention rather than interpretation.

Intellectual formation, however, entails the ability to scrutinise assumptions, compare rival explanations and relate specific problems to broader conceptual settings. Academic institutions remain responsive to public expectations and institutional incentives, yet inquiry presupposes a degree of reflective distance. The character of higher learning is shaped not only by curricular content but also by the habits of thought it encourages.

Q. With reference to the above passage, the following assumptions have been made:

I. Shifts in dietary preferences associated with higher incomes can affect the efficiency with which food resources are utilized.

II. The recovery of calories from livestock-based food is generally lower than that from direct plant consumption.

◦ Which of the above assumptions is/are valid?

- A. I only
- B. II only
- C. Both I and II
- D. Neither I nor II

◦ Correct Answer : C

◦ **Answer Justification :**

Assumption I is valid:

The passage connects rising incomes with increased livestock consumption and shows how this redirection of grains leads to caloric dissipation. This implies that dietary shifts influence efficiency in food utilization.

Assumption II is valid:

The passage provides specific recovery ratios (16% for poultry and lower for large livestock), indicating that calorie recovery from livestock-based food is lower compared to direct plant consumption.

5. Out of a total of 200 students in a college, 10% study all the three subjects – Physics, Chemistry and Mathematics. The number of students who study exactly two of the three subjects is 60. The number of students who study Physics alone is 50.

What is the total number of students who study Chemistry alone or Mathematics alone?

- A. 40
- B. 50
- C. 60
- D. 70

◦ Correct Answer : D

◦ **Answer Justification :**

Total students = 200

Students studying all three = 10% of 200 = 20

Students studying exactly two subjects = 60

Students studying Physics alone = 50

Let students studying Chemistry alone and Mathematics alone together = x

Now total students are divided into:

Physics alone = 50

Chemistry alone + Mathematics alone = x

Exactly two subjects = 60

All three subjects = 20

So,

$$50 + x + 60 + 20 = 200$$

$$130 + x = 200$$

$$x = 70$$

Hence, Chemistry alone or Mathematics alone together = 70

6. A string of length 700 m has 2 insects on it. Each insect moves either towards an end at 100 m/min. If they collide, they reverse direction. Insects fall only from the ends.

- What is the time after which the string will definitely be free of insects?
 - A. 5 min
 - B. 6 min
 - C. 7 min
 - D. 8 min

◦ Correct Answer : C

◦ **Answer Justification :**

Ignore collision (same as passing through).

Maximum time = length / speed = $700 / 100 = 7$ **minutes**.

So after **7 minutes**, the string will definitely be free of insects.

7. The marks of 21 students arranged in ascending order form an AP. Let the average of all 21 students be X. Later, students ranked 3rd, 7th, 11th, 15th, and 19th are removed. The average of the remaining 16 students becomes Y.

Statements:

I. $X = Y$

II. The sum of removed students' marks equals $5X$

- Which statement(s) is/are correct?
 - A. I only
 - B. II only
 - C. Both I and II
 - D. Neither I nor II

◦ Correct Answer : C

◦ **Answer Justification :**

For 21 terms, average $X = 11$ th term.

Removed ranks are 3rd, 7th, 11th, 15th, 19th.

These are symmetric around the 11th term (11th is the center).

In an AP, symmetric terms add to $2X$.

So:

$$3\text{rd} + 19\text{th} = 2X$$

$$7\text{th} + 15\text{th} = 2X$$

$$11\text{th} = X$$

Total removed sum = $2X + 2X + X = 5X \rightarrow$ statement II true.

Total sum = $21X$

Remaining sum = $21X - 5X = 16X$

Remaining average $Y = 16X/16 = X \rightarrow$ statement I true.

So **both** are correct.

8. Rahul and Suresh decide to meet between 2:00 PM and 3:00 PM. Whoever arrives first waits for 15 minutes. What is the probability that they will meet?

- A. 7/16
- B. 9/16
- C. 1/2
- D. 5/8

◦ Correct Answer : A

◦ **Answer Justification :**

Let arrival times be x and y minutes after 2:00 PM, with 0 to 60.

They meet if $|x - y| \leq 15$.

Non-meeting triangles have side $(60 - 15) = 45$.

Area of one triangle = $(1/2) \times 45 \times 45 = 1012.5$

Two triangles total = 2025.

Total area = 3600.

Meeting probability = $1 - 2025/3600$

= $1575/3600$

= $7/16$.

So correct answer is **(a) 7/16**.

9. There are 6 employees P, Q, R, S, T and U, each of whom must be assigned a distinct rank from 1 to 6.

- Rank 1 can be given only to P, Q, or R.
- Rank 6 cannot be given to T or U.

◦ In how many different ways can ranks be assigned?

- A. 144
- B. 216
- C. 240
- D. 180

◦ Correct Answer : B

◦ **Answer Justification :**

Assign Rank 1: choices = P/Q/R → **3 ways.**

Assign Rank 6: cannot be T or U.

So it can be given to P/Q/R/S. But one of P/Q/R is already used for rank 1.

So remaining eligible for rank 6 = **3 ways.**

Now remaining 4 ranks can be assigned to remaining 4 people in **4! = 24 ways.**

Total = $3 \times 3 \times 24 = 216$.

So correct answer is **216**,

10. A and B are natural numbers satisfying $A + 3B = 90$ How many solutions are there such that $A \geq B$?

- A. 20
- B. 22
- C. 30
- D. 15

◦ Correct Answer : B

◦ **Answer Justification :**

$$A = 90 - 3B$$

Condition $A \geq B$:

$$90 - 3B \geq B$$

$$90 \geq 4B$$

$$B \leq 22.5$$

Since B is natural, $B \leq 22$

So B can be 1 to 22 → **22 values.**

Hence total solutions = **22.**

11. An accurate clock shows the time as 7:00. When the hour hand has moved by 210° , what will be the time shown?

- A. 1:00
- B. 12:00
- C. 2:00

D. 3:00

◦ Correct Answer : C

◦ **Answer Justification :**

1 hour = 30°

210° corresponds to:

$210 \div 30 = 7$ hours

Starting from 7:00

After 7 hours → **2:00**

Hence, correct option: **(c) 2:00**

12. Which of the following symbols should be placed in the blank spaces (in the same order from left to right) to complete the expression?

It is known that $M \geq N$ and $P \leq Q$ are true.

$M = R$ ___ $N \leq S > P = T$ ___ Q

- A. \geq, \leq
- B. \leq, \geq
- C. $>, <$
- D. $\geq, >$

◦ Correct Answer : A

◦ **Answer Justification :**

We know $M \geq N$ is true. Also $M = R$, so $R \geq N$ must be true.
Therefore, the first blank must be \geq .

We also know $P \leq Q$ is true. Also $P = T$, so $T \leq Q$ must be true.
Therefore, the second blank must be \leq .

Hence, the correct pair is \geq, \leq .
So, option (a) is correct.

13. If * means “add 4 to the product of the two numbers”,

% means “subtract the second number from the cube of the first number”, and

& means “double the sum of the two numbers”.

What is the value of $(3 * 5) \% (4 \& 6)$?

- A. 6512
- B. 6839
- C. 7468
- D. 8500

◦ Correct Answer : B

◦ **Answer Justification :**

$$\begin{aligned}\text{Step 1: } & 3 * 5 \\ & = (3 \times 5) + 4 \\ & = 15 + 4 \\ & = 19\end{aligned}$$

$$\begin{aligned}\text{Step 2: } & 4 \& 6 \\ & = 2 \times (4 + 6) \\ & = 2 \times 10 \\ & = 20\end{aligned}$$

$$\begin{aligned}\text{Step 3: } & 19 \% 20 \\ & = (19^3) - 20 \\ & = 6859 - 20 \\ & = \mathbf{6839}\end{aligned}$$

14. Directions for the following 4 (Four) items:

Read the following two passages and answer the items that follow the passages. Your answer to these items should be based on the passages only.

Passage 1

A persistent feature of India's post-independence development trajectory has been the relative underperformance of agriculture when compared with the broader economy. While the non-agricultural sector registered progressively higher growth rates from the 1980s onward, agriculture reached its peak decadal compound growth of about 3.5% during the 1980s and subsequently entered a phase of relative stagnation. The divergence widened over time, not because agriculture contracted sharply, but because other sectors expanded at a consistently faster pace.

Q. Which one of the following statements most reasonably follows as a corollary to the passage?

- A. Structural transformation in India has proceeded with uneven sectoral momentum.
- B. Agricultural productivity has remained unchanged since the 1980s.
- C. Non-agricultural expansion has had limited macroeconomic significance.
- D. Growth patterns across sectors tend to converge automatically over time.

◦ Correct Answer : A

◦ **Answer Justification :**

Option (b) is incorrect:

The passage mentions relative stagnation in growth rates after the 1980s but does not state

that productivity remained unchanged. Stagnation in growth is not equivalent to zero productivity change.

Option (c) is incorrect:

On the contrary, the passage indicates that non-agricultural sectors experienced consistent growth, implying their expanding macroeconomic role.

Option (d) is incorrect:

The passage highlights widening divergence rather than convergence between sectors.

Option (a) is correct:

The text contrasts modest agricultural growth with sustained acceleration in non-agricultural sectors. This logically suggests that structural transformation occurred with uneven sectoral momentum.

15. Passage 1

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Q. With reference to the above passage, the following assumptions have been made:

- I. Differences in long-term sectoral growth rates can influence the overall structure of an economy.
- II. The divergence between agricultural and non-agricultural growth necessarily reflects a decline in agricultural output.

- Which of the above assumptions is/are valid?
 - A. I only
 - B. II only
 - C. Both I and II
 - D. Neither I nor II

- Correct Answer : A

- **Answer Justification :**

Assumption I is valid:

The passage notes that sustained differences in sectoral growth shaped structural transformation in uneven ways. This presumes that variations in growth rates affect the overall economic structure.

Assumption II is not valid:

The passage clarifies that divergence widened not because agriculture contracted sharply but because other sectors expanded more rapidly. Hence, divergence does not necessarily imply a decline in agricultural output.

16. Passage 2

Micronutrients—trace vitamins and minerals required in limited quantities—play a decisive role in metabolic regulation, immune response and neurological development. Deficiencies arise when diets lack diversity and are dominated by calorie-dense but nutrient-poor staples. Limited access to fresh produce, animal-source foods and fortified commodities increases the prevalence of such deficiencies.

The magnitude of micronutrient inadequacy remains substantial, particularly among women of reproductive age. In several low-income regions, a high proportion of women enter pregnancy with compromised nutritional reserves. When deficiencies persist during gestation, they are associated with impaired fetal growth, suboptimal cognitive development and elevated risks of maternal and neonatal complications. Situations of chronic food insecurity, especially in fragile or conflict-affected settings, further disrupt access to diversified diets and maternal healthcare services, intensifying these vulnerabilities.

Q. Which one of the following statements best captures the central concern of the passage?

- A. Micronutrient deficiencies are primarily caused by inadequate calorie intake.
- B. Nutritional vulnerability among women has intergenerational health implications.
- C. Humanitarian crises are the leading cause of maternal malnutrition worldwide.
- D. Fortified food distribution can substantially address micronutrient inadequacy.

◦ Correct Answer : B

◦ **Answer Justification :**

Option (a) is incorrect:

The passage distinguishes between calorie sufficiency and micronutrient adequacy. It notes that diets may be calorie-dense yet nutrient-poor. Hence, the issue is not simply inadequate calorie intake.

Option (c) is incorrect:

Humanitarian settings are mentioned as aggravating factors, but they are not presented as the primary global cause.

Option (d) is incorrect:

Although fortified foods are referenced as micronutrient sources, the passage does not evaluate policy solutions or claim their overall effectiveness.

Option (b) is correct:

The passage emphasises that deficiencies among women, especially during pregnancy, affect fetal growth, cognitive development and maternal health. This highlights the intergenerational implications of micronutrient inadequacy.

17. Passage 2

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The magnitude of micronutrient inadequacy remains substantial, particularly among women of reproductive age. In several low-income regions, a high proportion of women enter pregnancy with compromised nutritional reserves. When deficiencies persist during gestation, they are associated with impaired fetal growth, suboptimal cognitive development and elevated risks of maternal and neonatal complications. Situations of chronic food insecurity, especially in fragile or conflict-affected settings, further disrupt access to diversified diets and maternal healthcare services, intensifying these vulnerabilities.

Q. With reference to the above passage, the following assumptions have been made:

- I. Dietary diversity influences the micronutrient status of populations.
- II. Disruptions in maternal healthcare services can worsen nutrition-related risks during pregnancy.

- Which of the above assumptions is/are valid?
 - A. I only
 - B. II only
 - C. Both I and II
 - D. Neither I nor II

- Correct Answer : C

- **Answer Justification :**

Assumption I is valid:

The passage links micronutrient deficiencies to limited access to diverse foods such as fruits, vegetables and animal products. This implies that dietary diversity affects micronutrient status.

Assumption II is valid:

The passage notes that in fragile or humanitarian contexts, disruptions in antenatal and obstetric services intensify vulnerabilities related to maternal nutrition. This supports the assumption that healthcare access influences nutrition-related risks during pregnancy.

18. How many distinct 8-digit numbers can be formed by rearranging the digits of 22449977 such that even digits occupy odd positions and odd digits occupy even positions?

- A. 9
- B. 18
- C. 36
- D. 72

- Correct Answer : C

- **Answer Justification :**

Even digits: 2,2,4,4 (4 digits) → go to odd positions (4 slots)

$$\text{Ways} = 4! \div (2! \times 2!) = 24 \div 4 = 6$$

Odd digits: 9,9,7,7 (4 digits) → go to even positions (4 slots)

$$\text{Ways} = 4! \div (2! \times 2!) = 6$$

$$\text{Total} = 6 \times 6 = \mathbf{36}$$

19. If on 1st January 2000, the day was Saturday, then which day is 2 days before (10^{11}) days from 1st January 2000?

- A. Monday
- B. Tuesday
- C. Wednesday
- D. Thursday

◦ Correct Answer : B

◦ **Answer Justification :**

Using the same remainder cycle:

$$10^{11} = 10^{(6 \times 1 + 5)} \rightarrow \text{same remainder as } 10^5 \rightarrow \text{remainder } \mathbf{5}.$$

So, 10^{11} days after Saturday = Saturday + 5 = **Thursday**.

2 days before Thursday = **Tuesday**.

20. Four colleagues—Amit, Karan, Meera, and Pooja—had dinner together:

1. Amit ate soup and noodles.
2. Karan ate soup and sandwich.
3. Meera ate noodles, sandwich, and juice.
4. Pooja ate soup, juice, and noodles.
5. After dinner, Amit and Pooja fell sick.

◦ Which of the following was most likely the cause?

- A. Soup
- B. Noodles
- C. Sandwich
- D. Juice

◦ Correct Answer : B

◦ **Answer Justification :**

Check what Amit and Pooja both ate:

- Amit: soup, noodles
- Pooja: soup, juice, noodles

Common items = soup and noodles

But Karan also ate soup and did not fall sick.
So soup is unlikely.

Only Amit and Pooja ate **noodles**.

Hence, **Noodles** is the most likely cause.

21. Find the value of ? in the given matrix:

64	128	32
78	156	39
92	184	?

- A. 41
- B. 46
- C. 48
- D. 52

◦ Correct Answer : B

◦ **Answer Justification :**

Row pattern:

- Second number is double of the first (64→128, 78→156, 92→184)
- Third number is half of the first (64→32, 78→39)

So for 92, third = $92 \div 2 = 46$.

22. In a garden, two concentric circular ponds are constructed. The bigger pond has a diameter of 50 meters, and the smaller pond has a radius of 15 meters. What is the area of the ring-shaped region between the ponds?

- A. 325π
- B. 400π
- C. 275π
- D. 225π

◦ Correct Answer : B

◦ **Answer Justification :**

- Radius of larger pond = $50/2 = 25$ m
- Radius of smaller pond = 15 m
- Area of ring-shaped region = $\pi(25^2 - 15^2)$
= $\pi(625 - 225)$
= **400π** square meters.

23. Three Statements followed by two Conclusions are given below. You have to take the Statements to be true even if they seem to be at variance from the commonly known facts. Read all the Conclusions and then decide which of the given Conclusions logically follows/follow the Statements.

Statement-1: Only Teachers are Professors.

Statement-2: Some Professors are Singers.

Statement-3: No Singer is Dancer.

Conclusion-I: Some Teachers are not Dancers.

Conclusion-II: Some Dancers are Professors.

◦ Which one of the following is correct?

- A. Only Conclusion-I
- B. Either Conclusion-I or Conclusion-II
- C. Only Conclusion-II
- D. Neither Conclusion-I nor Conclusion-II

◦ Correct Answer : A

◦ **Answer Justification :**

“Only Teachers are Professors” \Rightarrow All Professors are Teachers.

“Some Professors are Singers” \Rightarrow Some Teachers are Singers.

“No Singer is Dancer” \Rightarrow Those Singer-Teachers are not Dancers.

So, **some Teachers are not Dancers** \Rightarrow Conclusion I follows.

There is no statement connecting Dancers with Professors, so Conclusion II does not follow.
Hence, only Conclusion I follows.

24. A Question is given followed by two Statements I and II. Consider the Question and the Statements.

Question: Is $x < 0$?

Statement I: $x^3 < x$

Statement II: $x^2 > x$

◦ Which one of the following is correct with respect to above?

- A. One statement alone sufficient
- B. Either statement alone sufficient
- C. Both together sufficient, neither alone
- D. Even both together not sufficient

◦ Correct Answer : C

◦ **Answer Justification :**

Statement I:

$$x^3 < x$$

$$\Rightarrow x(x^2 - 1) < 0$$

$$\Rightarrow x(x-1)(x+1) < 0$$

Possible intervals: $-1 < x < 0$ OR $x > 1$.

So x could be negative or positive \rightarrow not sufficient.

Statement II:

$$x^2 > x$$

$$\Rightarrow x(x-1) > 0$$

$$\Rightarrow x < 0 \text{ OR } x > 1.$$

Not sufficient.

Together:

Common region between results = $-1 < x < 0$.

So x must be negative.

Hence both together are sufficient, neither alone.

25. What are the missing terms in the following series?

188, 244, 292,, 364,, 404

- A. 332 and 388
- B. 332 and 378
- C. 336 and 368
- D. 346 and 388

◦ Correct Answer : A

◦ **Answer Justification :**

Find differences:

$$188 \rightarrow 244 = +56$$

$$244 \rightarrow 292 = +48$$

The difference is decreasing by 8 each time:

$$+56, +48, +40, +32, +24$$

Now continue:

$$292 + 40 = 332 \text{ (1st missing)}$$

$$332 + 32 = 364 \text{ (given)}$$

$$364 + 24 = 388 \text{ (2nd missing)}$$

$$388 + 16 = 404 \text{ (given)}$$

So the missing terms are 332 and 388.

Hence, option (a) is correct.

26. Directions for the following 4 (Four) items:

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Passage 1

In public discourse, handlooms are frequently invoked as embodiments of cultural continuity. This association has shaped policy frameworks that justify State patronage on the grounds of preserving tradition. Yet the category of “tradition” itself has become a site of contestation. Rather than a unified and linear inheritance, it is increasingly viewed as a field shaped by selective memory, dominant narratives and the marginalisation of alternative histories.

Groups whose identities were earlier discounted or muted now seek recognition within broader cultural accounts. In this shifting terrain, projecting handloom solely as a custodian of an unbroken past may narrow its resonance. When an industry is anchored to a singular narrative of heritage, sections of society that do not see themselves reflected in that narrative may disengage from it.

Q. Which one of the following statements best reflects the most reasonable implication of the passage?

- A. The handloom sector may need to be rearticulated beyond a singular heritage narrative to widen its social relevance.
- B. State patronage has distorted the organic growth of handloom traditions.
- C. Cultural industries should function independently of historical narratives.
- D. Recognition of marginalised identities requires abandoning traditional industries.

◦ Correct Answer : A

◦ **Answer Justification :**

Option (b) is incorrect:

The passage does not suggest that State patronage has distorted growth. It notes that policy support is linked to a particular understanding of tradition but does not critique patronage itself.

Option (c) is incorrect:

The argument is not that cultural industries must detach from history. Rather, it questions the dominance of a singular narrative of tradition.

Option (d) is incorrect:

The passage does not advocate abandoning traditional industries. It highlights the consequences of framing them within a narrow conception of heritage.

Option (a) is correct:

By noting that sections disengage when handloom is promoted through a singular narrative, the passage implies that reframing it in a more inclusive manner could enhance its broader relevance.

27. With reference to the above passage, the following assumptions have been made:

- I. The way an industry is culturally framed can influence public engagement with it.
- II. Diverse social groups seek representation within dominant narratives of culture and history.

- Which of the above assumptions is/are valid?
 - A. I only
 - B. I only
 - C. Both I and II
 - D. Neither I nor II

- Correct Answer : C

- **Answer Justification :**

Assumption I is valid:

The passage indicates that when handloom is promoted through a singular heritage narrative, sections of society disengage. This presumes that cultural framing affects public response.

Assumption II is valid:

The text refers to identities that were earlier discounted or muted now seeking rightful recognition. This implies that diverse groups aim to be represented within broader cultural narratives.

28. Passage 2

Disaster Risk Management is conceptualised as a continuum organised across three temporal phases: pre-disaster, response and recovery. The pre-disaster phase includes risk assessment, hazard-specific mitigation and preparedness planning. Preparedness measures may involve establishing response teams, drafting evacuation procedures, setting up early warning systems and conducting simulation exercises.

The response phase corresponds to the immediate aftermath of an event, when previously designed procedures are activated to safeguard lives and vulnerable assets. The recovery phase extends beyond emergency relief and includes systematic damage assessment, structural repairs, restoration, retrofitting and rehabilitation processes. These phases are temporally distinct yet linked within a broader management framework.

Q. Which one of the following statements best reflects the central idea of the passage?

- A. The passage concentrates mainly on emergency response mechanisms.
- B. Disaster Risk Management is structured as a sequence of interconnected stages.
- C. Recovery measures receive greater emphasis than preventive measures.
- D. Early warning systems are the core element of disaster planning.

- Correct Answer : B

- **Answer Justification :**

Option (a) is incorrect:

Emergency response is discussed, but it is presented as one among three phases.

Option (c) is incorrect:

The passage does not prioritise recovery over prevention; it describes each stage within a structured sequence.

Option (d) is incorrect:

Early warning systems are mentioned as part of preparedness, not as the central element of the framework.

Option (b) is correct:

The passage explains DRM as comprising pre-disaster, response and recovery phases, indicating a sequential and interconnected structure.

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Q. Based on the above passage, consider the following statements:

1. Conducting simulation exercises is associated with the preparedness stage.
2. Damage assessment is undertaken during the immediate response phase.

- Which of the above statements is/are correct?
 - A. 1 only
 - B. 2 only
 - C. Both 1 and 2
 - D. Neither 1 nor 2

- Correct Answer : A

◦ **Answer Justification :**

Statement 1 is correct:

Simulation exercises are listed under preparedness measures within the pre-disaster phase.

Statement 2 is incorrect:

Damage assessment is described as part of the recovery phase rather than the immediate response phase.

30. A new sequence is obtained from $\{1, 2, 3, \dots\}$ by deleting all the perfect squares. The 500th term of the new sequence is:

- A. 520

- B. 521
- C. 522
- D. 523

◦ Correct Answer : C

◦ **Answer Justification :**

Let the required term be n . Then: $n - \lfloor \sqrt{n} \rfloor = 500$.

Try $\lfloor \sqrt{n} \rfloor = 22 \rightarrow n = 500 + 22 = 522$.

Check: $22^2 = 484 \leq 522$ and $23^2 = 529 > 522$

So the 500th term is **522**.

31. There are seven students A, B, C, D, E, F, G and seven seats 1 to 7, one seat per student.

- Neither A nor B can sit on seat 1.
- Seat 2 must be occupied by either C or D.

◦ In how many ways can the students be seated?

- A. 720
- B. 960
- C. 1200
- D. 1440

◦ Correct Answer : B

◦ **Answer Justification :**

Seat 2 must be taken by C or D → **2 ways**.

Now 6 students remain and 6 seats remain.

Seat 1 cannot be taken by A or B.

Among remaining 6 students, A and B are present, so seat 1 can be occupied by any of the other **4 students** → **4 ways**.

Remaining 5 students can be arranged in remaining 5 seats in **$5! = 120$** ways.

Total = $2 \times 4 \times 120 = \mathbf{960}$.

32. Five people—A, B, C, D, and E—are sitting in a single row facing North.

Question: Who is sitting in the exact middle of the row?

Statement I: A sits immediately left of B, and E sits immediately right of B.

Statement II: C sits immediately left of D.

- Which one of the following is correct?
 - A. One statement alone is sufficient, but the other alone is not
 - B. Either statement alone is sufficient
 - C. Both statements together are sufficient, but neither alone
 - D. Even both together are not sufficient

◦ Correct Answer : D

◦ **Answer Justification :**

From Statement I, A-B-E must sit consecutively with B in the middle of that trio.
From Statement II, C-D must sit consecutively.

Now both together can fit in more than one way, for example:

1. **A B E C D** → middle is **E**
2. **C D A B E** → middle is **A**

Since the middle person changes, we cannot determine a unique answer even after using both statements together.

So, option (d) is correct.

33. Age of each of A and B is a two-digit number. If you interchange the digits of A's age, you get B's age.

Question: What is the difference of their ages?

Statement I: A is older than B.

Statement II: The sum of their ages is 11 times the sum of the digits of A's age.

- Which one of the following is correct with respect to above?
 - A. One statement alone is sufficient, but the other alone is not
 - B. Either statement alone is sufficient
 - C. Both statements together are sufficient, but neither alone
 - D. Even both together are not sufficient

◦ Correct Answer : D

◦ **Answer Justification :**

Let $A = 10x + y$, $B = 10y + x$.

Statement II: Sum of ages = $(10x+y) + (10y+x) = 11(x+y)$.

Right side says sum is 11 times sum of digits of A, which is also $11(x+y)$.

So statement II is always true for any such reversal pair. It gives no new info → not sufficient.

Statement I: A older than B gives $x > y$, but still many possibilities → not sufficient to find exact difference.

So neither alone works, and together also doesn't fix a unique pair.

So correct choice is option **(d)**.

34. Three equal containers X, Y, Z are full of mixtures with ethanol percentages 30%, 60%, and 90% respectively. All contents are mixed.

Statements:

I. The final mixture contains 60% ethanol.

II. If water is free and the mixture is sold at 10% above the cost price of pure ethanol (per unit mixture), profit is greater than 80%.

◦ Which one of the following is correct?

A. I only

B. II only

C. Both I and II

D. Neither I nor II

◦ Correct Answer : C

◦ **Answer Justification :**

$$\text{Ethanol total} = 0.3 + 0.6 + 0.9 = 1.8$$

$$\text{Total mixture} = 3$$

$$\text{So ethanol \%} = 1.8/3 = 60\% \rightarrow \text{statement I true.}$$

$$\text{Cost} = 1.8$$

$$\text{Selling price per unit mixture} = 1.1$$

$$\text{Total SP} = 3 \times 1.1 = 3.3$$

$$\text{Profit} = 3.3 - 1.8 = 1.5$$

$$\text{Profit \%} = 1.5/1.8 \times 100 = 83.33\% > 80\%$$

Statement II true.

So both are correct

35. P and Q can complete a work in 12 days, Q and R can complete it in 16 days, and P and R can complete it in $48/5$ days. They work together for 4 days, then P leaves. Q and R work for 2 days, then R leaves. Q completes the remaining work alone.

Statements:

I. The efficiency of Q is half the efficiency of R.

II. The total time taken to complete the work is 24 days.

III. P does more work than R in the entire project.

◦ Which of the above statements are correct?

A. I and II only

B. II only

C. I and III only

D. I and II and III

◦ Correct Answer : A

◦ **Answer Justification :**

From the given pair-times, the consistent efficiencies come out as:

$$P = 1/16, Q = 1/48, R = 1/24$$

So Q is half of R \rightarrow Statement I true.

Work done:

$$\text{All three rate} = 1/16 + 1/48 + 1/24 = 1/8$$

$$\text{In 4 days: } 4 \times 1/8 = 1/2$$

$$Q+R \text{ rate} = 1/16$$

$$\text{In 2 days: } 2 \times 1/16 = 1/8$$

$$\text{Total done} = 5/8, \text{ remaining} = 3/8$$

$$Q \text{ alone rate} = 1/48$$

$$\text{Time} = (3/8) \div (1/48) = 18 \text{ days}$$

$$\text{Total time} = 4 + 2 + 18 = 24 \text{ days} \rightarrow \text{Statement II true.}$$

Compare work by P and R:

$$P \text{ worked 4 days: } 4 \times 1/16 = 1/4$$

$$R \text{ worked 4 days} + 2 \text{ days: } 4 \times 1/24 + 2 \times 1/24 = 1/6 + 1/12 = 1/4$$

So P is not more than R \rightarrow Statement III false.

Hence, I and II only.

36. 35 kg of type A sandal powder, which costs ₹614 per kg, was mixed with a certain amount of type B sandal powder, which costs ₹695 per kg. Then the mixture was sold at the rate of ₹767 per kg and 18% profit was earned. What was the amount (in kg) of type B sandal powder in the mixture?

- A. 24
- B. 28
- C. 32
- D. 36

◦ Correct Answer : B

◦ **Answer Justification :**

$$\text{Profit } 18\% = \text{Cost price (CP) per kg of mixture} = 767 \div 1.18 = ₹650.$$

Use allegation on costs to get mean ₹650 from ₹614 and ₹695:

$$B \text{ side} = 695 - 650 = 45; A \text{ side} = 650 - 614 = 36.$$

So A : B = 45 : 36 = 5 : 4.

Given A = 35 kg = 5 parts \Rightarrow 1 part = 7 kg \Rightarrow B = 4 parts = 28 kg.

37. Seema starts from Point X and walks 12 km South to reach Point Y. From Point Y, she takes a right turn and walks 5 km to reach Point Z. From Point Z, she takes a right turn and walks 7 km to reach Point W. From Point W, she takes a right turn and walks 9 km to reach Point V.

◦ In which direction is Point V with respect to Point X?

- A. North
- B. South - East
- C. East
- D. South - West

◦ Correct Answer : B

◦ **Answer Justification :**

- X to Y: 12 km South

Facing South, right turn \rightarrow West: Y to Z = 5 km West

Facing West, right turn \rightarrow North: Z to W = 7 km North

Facing North, right turn \rightarrow East: W to V = 9 km East

Net movement from X:

- East-West: 9 East – 5 West = 4 km East
- North-South: 7 North – 12 South = 5 km South

So V is **South-East** of X.

38. The letters of the word "EDUCATION" are rearranged such that all the vowels are first arranged in alphabetical order and placed at the start. Then all the consonants are arranged in reverse alphabetical order and placed after all the vowels. After this arrangement, how many letters will occupy the same position as they did in the original word?

- A. None
- B. One
- C. Two
- D. Three

◦ Correct Answer : B

◦ **Answer Justification :**

Original: **EDUCATION** (9 letters)

Vowels: **E, U, A, I, O**

Alphabetical order: **A E I O U** → placed at positions 1-5

Consonants: **D, C, T, N**

Reverse alphabetical order: **T N D C** → placed at positions 6-9

Now compare original vs new positions:

Only **letter at position 2** matches (E stays at position 2).

So, exactly **one** letter remains in the same position.

39. Directions for the following 4 (Four) items:

Read the following two passages and answer the items that follow the passages. Your answer to these items should be based on the passages only.

Passage 1

The impacts of climate variability are not spatially uniform across India. Coastal regions confront the implications of sea-level rise and intensified cyclonic activity, while arid and semi-arid districts must adapt to fluctuations in monsoon patterns. Himalayan ecosystems face glacial retreat and associated hydrological changes. At the same time, geographic diversity presents differentiated possibilities for emission reduction: wind corridors in peninsular and offshore regions, solar potential in arid zones and varied bio-resources elsewhere.

Q. Which one of the following statements best reflects the most reasonable inference from the passage?

- A. Climate action in India should be decentralised without coordination at the national level.
- B. Regional diversity complicates the formulation of climate policy.
- C. Climate strategies should account for State-specific vulnerabilities and resource endowments.
- D. Coastal and Himalayan regions require identical adaptation frameworks.

○ Correct Answer : C

○ **Answer Justification :**

Option (a) is incorrect:

The passage highlights regional variation but does not argue for climate action without national coordination.

Option (b) is incorrect:

Diversity is presented as a condition to be addressed through differentiated planning, not as an obstacle.

Option (d) is incorrect:

The passage stresses distinct challenges in different regions, which contradicts the idea of identical frameworks.

Option (c) is correct:

By referring to varied regional vulnerabilities and mitigation opportunities, the passage

supports strategies tailored to State-specific contexts.

40. Passage 1

The impacts of climate variability are not spatially uniform across India. Coastal regions confront the implications of sea-level rise and intensified cyclonic activity, while arid and semi-arid districts must adapt to fluctuations in monsoon patterns. Himalayan ecosystems face glacial retreat and associated hydrological changes. At the same time, geographic diversity presents differentiated possibilities for emission reduction: wind corridors in peninsular and offshore regions, solar potential in arid zones and varied bio-resources elsewhere.

Q. With reference to the above passage, the following assumptions have been made:

I. Renewable energy potential can form part of emission reduction strategies.

II. All regions experience climate change impacts in similar forms and intensity.

- Which of the above assumptions is/are valid?
 - A. I only
 - B. II only
 - C. Both I and II
 - D. Neither I nor II

○ Correct Answer : A

○ **Answer Justification :**

Assumption I is valid:

The passage refers to wind power potential in peninsular and offshore areas as part of emission reduction opportunities, indicating that renewable energy can be integrated into mitigation strategies.

Assumption II is not valid:

The passage explicitly emphasises differentiated impacts across coastal, Himalayan and arid regions, indicating variation rather than uniformity.

41. Passage 2

While social inequality is often identified as a deeply felt societal concern in India, economic insecurity appears to exert a more pervasive psychological weight than poverty alone. Individuals below the official poverty threshold confront material deprivation, yet those marginally above it remain vulnerable to health shocks, unstable employment, market volatility and asset-related risks.

Such vulnerabilities extend beyond income measurement and shape everyday economic anxieties. In recognition of these layered uncertainties, several public policies are framed not solely around poverty alleviation but around moderating exposure to risk.

Q. Which one of the following statements best captures the principal idea conveyed by the passage?

- A. Social inequality and economic distress together define India's central developmental challenge.
- B. Income-based poverty estimates do not fully capture the experience of economic vulnerability.

- C. Government policies have largely eliminated extreme poverty in India.
- D. Market volatility is the predominant driver of insecurity in the economy.

◦ Correct Answer : B

◦ **Answer Justification :**

Option (a) is incorrect:

Although both inequality and insecurity are mentioned, the passage distinguishes between them and concentrates on insecurity as an economic experience that extends beyond poverty.

Option (c) is incorrect:

The passage notes the existence of policies aimed at mitigating insecurity but does not claim that poverty has been eliminated.

Option (d) is incorrect:

Market volatility is cited as one source of insecurity among others, such as health and employment risks. It is not singled out as the predominant driver.

Option (b) is correct:

By highlighting that even those above the poverty line experience insecurity, the passage indicates that income-based poverty measures do not fully reflect economic vulnerability.

42. Passage 2

While social inequality is often identified as a deeply felt societal concern in India, economic insecurity appears to exert a more pervasive psychological weight than poverty alone. Individuals below the official poverty threshold confront material deprivation, yet those marginally above it remain vulnerable to health shocks, unstable employment, market volatility and asset-related risks.

Such vulnerabilities extend beyond income measurement and shape everyday economic anxieties. In recognition of these layered uncertainties, several public policies are framed not solely around poverty alleviation but around moderating exposure to risk.

Q. With reference to the above passage, the following assumptions have been made:

- I. Economic vulnerability can persist even when individuals are not classified as poor.
- II. Addressing poverty automatically resolves broader forms of economic insecurity.

◦ Which of the above assumptions is/are valid?

- A. I only
- B. II only
- C. Both I and II
- D. Neither I nor II

◦ Correct Answer : A

◦ **Answer Justification :**

Assumption I is valid:

The passage explicitly notes that individuals just above the poverty line remain exposed to

multiple insecurities. This implies that vulnerability is not confined to those officially classified as poor.

Assumption II is not valid:

The passage distinguishes insecurity from poverty and suggests that vulnerabilities extend beyond income levels. Hence, eliminating poverty does not necessarily remove broader forms of economic insecurity.

43. Consider the following statements about five candidates A, B, C, D, and E who appeared for an interview. It is known that two statements are true and one statement is false.

Statement 1 (True): If A was selected, then B was also selected; if C was selected, then A was not selected.

Statement 2 (False): At most one of A, C, and D was selected.

Statement 3 (True): Exactly one of A and E was selected, and B was not selected.

Which of the following conclusions can be drawn?

I. C was definitely selected.

II. At most three candidates were selected.

◦ Select the correct answer:

A. I only

B. II only

C. Both I and II

D. Neither I nor II

◦ Correct Answer : C

◦ **Answer Justification :**

▪ Statement 3 says **B is not selected**.

▪ From Statement 1, if **A** were selected then **B** must be selected. But B is not selected, so **A cannot be selected**.

▪ Statement 3 also says exactly one of A and E is selected → since A is not selected, **E is selected**.

▪ Statement 2 is false, so it is NOT true that “at most one of A, C, D is selected” → meaning **at least two** among **A, C, D** are selected.

▪ Since **A is not selected**, the two must be **C and D**. Hence **C is definitely selected**.

▪ Now selected candidates are **C, D, E** → total is **3**, so “at most three” is true.

Thus, both I and II follow.

44. n is a natural number such that $0 < n < 101$. For how many values of n will the unit's digit of $4^n + 6^n$ be 0?

A. 50

B. 49

C. 48

D. 46

◦ Correct Answer : A

◦ **Answer Justification :**

Unit digit patterns:

- 4^n : **4, 6, 4, 6, ...** (odd $n \rightarrow 4$, even $n \rightarrow 6$)
- 6^n : always **6**

So:

- If n is odd: 4^n ends in 4 $\rightarrow 4 + 6 = 10$
- If n is even: 4^n ends in 6 $\rightarrow 6 + 6 = 12$

So it happens for **odd n** only \rightarrow count = **50**.

45. Team A won two-thirds of the matches initially. Then 12 more matches were played and team A lost all of them. As a result, the overall fraction of matches won by team A became one-half. How many matches had team A originally won?

- A. 12
- B. 18
- C. 24
- D. 36

◦ Correct Answer : C

◦ **Answer Justification :**

Let initial matches = x .
Initial wins = $2x/3$

After 12 losses:
Total matches = $x + 12$
Wins remain = $2x/3$

Given:

$$(2x/3) \div (x + 12) = 1/2$$

Cross multiply:

$$4x = 3x + 36$$

$$x = 36$$

$$\text{Initial wins} = 2/3 \times 36 = 24$$

Hence, the answer is 24.

46. A family get-together consisted of grandfather, grandmother, father, mother, three sons with their wives, and two daughters with their husbands. Each son has one daughter and one son. Each daughter has two daughters. How many females are present in the get-together?

- A. 12
- B. 11
- C. 13
- D. 10

◦ Correct Answer : C

◦ **Answer Justification :**

Grandmother = 1

Mother = 1

Sons' wives = 3

Daughters = 2

Daughters' husbands = 2 (not female)

Sons' children: each son has 1 daughter $\Rightarrow 3 \times 1 = 3$ females

Daughters' children: each daughter has 2 daughters $\Rightarrow 2 \times 2 = 4$ females

Total females

$1(\text{grandmother}) + 1(\text{mother}) + 3(\text{sons' wives}) + 2(\text{daughters}) + 3(\text{sons' daughters}) + 4(\text{daughters' daughters}) = 13$

47. The average of three numbers a, b and c is m. a is 5 more than the average and b is 5 less than the average. What is the value of c?

- A. m
- B. $m + 5$
- C. $m - 5$
- D. $2m$

◦ Correct Answer : A

◦ **Answer Justification :**

$a = m + 5, b = m - 5$

$(a + b + c) / 3 = m$

$((m + 5) + (m - 5) + c) / 3 = m$

$(2m + c) / 3 = m$

$$2m+c=3m$$

$$c=m$$

So option **(a) is correct.**

48. Consider the following Question and the Statements:

Statement 1: Rohit met Tina at 6:00 a.m. Both were facing each other. Tina noticed that Rohit's shadow was falling to his right.

Statement 2: Rohit met Tina at 6:00 p.m. Both were facing each other. Tina noticed that her shadow was falling to her left.

Question: Which direction is Rohit facing?

- Which one of the following is correct?
 - A. The Question can be answered by using one Statement alone, but not the other alone.
 - B. The Question can be answered by using both Statements together, but not by either alone.
 - C. The Question can be answered by using either Statement alone.
 - D. The Question cannot be answered even by using both Statements together.

○ Correct Answer : C

○ **Answer Justification :**

- **6 a.m.** → Sun East → shadow West
- **6 p.m.** → Sun West → shadow East

Statement 1:

At 6 a.m., Rohit's shadow = **West**.

Given shadow is to Rohit's **right** ⇒ his right side points West ⇒ Rohit faces **South**.
Sufficient.

Statement 2:

At 6 p.m., Tina's shadow = **East**.

Shadow is to her **left** ⇒ her left side points East ⇒ Tina faces **North**.

They face each other ⇒ Rohit faces **South**.
Sufficient.

So **either statement alone** can determine Rohit's direction.

Hence option **(c)**.

49. Find the number of zeros at the end of the number obtained by multiplying all the numbers from 1 to 250 together.

- A. 62
- B. 60
- C. 64
- D. 58

◦ Correct Answer : A

◦ **Answer Justification :**

We need the number of trailing zeros in **250!**

Number of zeros depends on the number of 5s in prime factorisation.

Count powers of 5:

$$\lfloor 250/5 \rfloor = 50$$

$$\lfloor 250/25 \rfloor = 10$$

$$\lfloor 250/125 \rfloor = 2$$

$$\lfloor 250/625 \rfloor = 0$$

$$\text{Total} = 50 + 10 + 2 = \mathbf{62}$$

Hence, number of zeros = **62**

50. If a two-digit number n is divided by the sum of its digits, the quotient is 5 and the remainder is 13. If the reversed number is divided by the sum of its digits, the quotient is 5 and the remainder is 4. Find the sum of the digits.

- A. 17
- B. 19
- C. 13
- D. 21

◦ Correct Answer : A

◦ **Answer Justification :**

Let the sum of digits be S .

$$\text{Original number} = 5S + 13$$

$$\text{Reversed number} = 5S + 4$$

Add both:

$$\begin{aligned} \text{Original} + \text{Reversed} &= (5S + 13) + (5S + 4) \\ &= 10S + 17 \end{aligned}$$

But we know:

$$\text{Original} + \text{Reversed} = 11S$$

So,

$$11S = 10S + 17$$

$$S = 17$$

Hence, sum of digits = 17

51. Directions for the following 4 (Four) items:

Read the following two passages and answer the items that follow the passages. Your answer to these items should be based on the passages only.

Passage 1

Ecosystems serve multiple and sometimes competing functions: sustaining biodiversity, supporting livelihoods and enabling commercial exploitation. Prioritising one objective often constrains the others. A conservation-oriented approach may restrict income-generating activities, while intensive commercial use can weaken ecological stability and undermine long-term livelihood security.

Deforestation driven by commercial extraction may produce secondary effects such as flooding, siltation and local climatic variation. These environmental shifts, in turn, affect communities dependent on forests for subsistence. The tensions are particularly pronounced in developing economies where ecological resources contribute both to household survival and to aggregate economic growth.

- Which one of the following statements best captures the central concern of the passage?
 - A. Conservation policies tend to ignore the economic aspirations of developing countries.
 - B. Ecosystems generate unavoidable conflict between biodiversity protection and income generation.
 - C. The competing uses of ecosystems create tensions between conservation, livelihoods and commercial growth.
 - D. Environmental degradation is primarily the outcome of poverty in developing countries.
- Correct Answer : C

◦ **Answer Justification :**

Option (a) is incorrect:

The passage does not argue that conservation policies ignore economic aspirations. It highlights tensions among multiple objectives rather than assigning neglect to one side.

Option (b) is incorrect:

The passage describes conflict but does not suggest that it is unavoidable. It presents the coexistence of competing objectives as a source of tension.

Option (d) is incorrect:

Poverty is not identified as the primary cause of environmental degradation. The focus is on the interaction between commercial exploitation, conservation and livelihood dependence.

Option (c) is correct:

The passage consistently refers to conflicts arising from attempts to conserve biodiversity, sustain livelihoods and pursue commercial exploitation within the same ecosystem.

52. Passage 1

Ecosystems serve multiple and sometimes competing functions: sustaining biodiversity, supporting livelihoods and enabling commercial exploitation. Prioritising one objective often constrains the others. A conservation-oriented approach may restrict income-generating activities, while intensive commercial use can weaken ecological stability and undermine long-term livelihood security.

Deforestation driven by commercial extraction may produce secondary effects such as flooding, siltation and local climatic variation. These environmental shifts, in turn, affect communities dependent on forests for subsistence. The tensions are particularly pronounced in developing economies where ecological resources contribute both to household survival and to aggregate economic growth.

Q. With reference to the above passage, the following assumptions have been made:

- I. Economic development strategies in some countries involve the commercial use of ecological resources.
- II. Environmental degradation inevitably improves short-term livelihood conditions.

◦ Which of the above assumptions is/are valid?

- A. I only
- B. II only
- C. Both I and II
- D. Neither I nor II

◦ Correct Answer : A

◦ **Answer Justification :**

Assumption I is valid:

The passage notes that commercial exploitation of ecosystems can contribute to national income, particularly in developing countries. This implies that ecological resources are integrated into development strategies.

Assumption II is not valid:

The passage indicates that deforestation and ecological degradation can harm livelihoods through indirect effects such as floods and instability. It does not suggest that degradation improves livelihood conditions.

53. Passage 2

Technological transitions in the energy sector rarely proceed in a linear fashion. Initial investments often appear costly, uncertain and dependent on policy support. Yet sustained deployment can generate feedback effects: improvements in manufacturing processes, expansion of supply chains and incremental refinements in design. These dynamics reduce production costs over time and may alter investor expectations.

The experience of solar power during the 2010s illustrates this pattern. As installation volumes expanded across markets, prices declined far more rapidly than anticipated. Forecasting models repeatedly underestimated the speed of cost compression. This suggests that projections based solely on present costs may overlook the cumulative impact of scaling and iterative innovation.

Q. Which one of the following statements best captures the principal insight of the passage?

- A. Government subsidies are indispensable for the survival of renewable energy industries.
- B. Energy transitions are difficult to forecast because technological costs can decline unexpectedly with scale.

- C. Solar power is the most reliable form of renewable energy.
- D. Manufacturing expansion guarantees long-term profitability in energy markets.

◦ Correct Answer : B

◦ **Answer Justification :**

Option (a) is incorrect:

Although early investments may involve policy support, the passage does not argue that subsidies are indispensable.

Option (c) is incorrect:

Reliability of solar energy is not discussed; the focus is on cost dynamics and forecasting.

Option (d) is incorrect:

The passage mentions cost reductions through scaling but does not claim that profitability is guaranteed.

Option (b) is correct:

The passage emphasises that cost declines in solar power outpaced forecasts due to scaling and learning effects, highlighting the difficulty of predicting technological transitions.

54. Passage 2

Technological transitions in the energy sector rarely proceed in a linear fashion. Initial investments often appear costly, uncertain and dependent on policy support. Yet sustained deployment can generate feedback effects: improvements in manufacturing processes, expansion of supply chains and incremental refinements in design. These dynamics reduce production costs over time and may alter investor expectations. The experience of solar power during the 2010s illustrates this pattern. As installation volumes expanded across markets, prices declined far more rapidly than anticipated. Forecasting models repeatedly underestimated the speed of cost compression. This suggests that projections based solely on present costs may overlook the cumulative impact of scaling and iterative innovation.

Q. With reference to the above passage, the following assumptions have been made:

- I. Forecasting models may not fully account for cumulative learning effects in technology deployment.
- II. Present cost structures provide a complete basis for predicting future technological trends.

◦ Which of the above assumptions is/are valid?

- A. I only
- B. II only
- C. Both I and II
- D. Neither I nor II

◦ Correct Answer : A

◦ **Answer Justification :**

Assumption I is valid:

The passage notes that forecasts underestimated the pace of cost compression, implying that

models may not fully incorporate cumulative learning and scale effects.

Assumption II is not valid:

The text suggests that relying solely on present costs can misrepresent future trends, as cumulative deployment alters cost structures over time.

55. If p_1 and p_2 are prime numbers such that $p_1 < p_2 < 50$ and $p_1 + p_2$ is a factor of 60, then how many values of p_1 are possible?

- A. 1
- B. 3
- C. 5
- D. 7

◦ Correct Answer : C

◦ **Answer Justification :**

Explanation:

Factors of 60: 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60

Sum of two odd primes is even → possible sums must be **even factors:** 4, 6, 10, 12, 20, 30, 60 (ignore 2).

Now check each sum and see possible p_1 :

- $4 = 2 + 2$ (not allowed since $p_1 < p_2$)
- $6 = 1 + 5$ not possible; $3 + 3$ not allowed
- $10 = 3 + 7 \rightarrow p_1 = 3$
- $12 = 5 + 7 \rightarrow p_1 = 5$
- $20 = 3 + 17 \rightarrow p_1 = 3$; $7 + 13 \rightarrow p_1 = 7$
- $30 = 7 + 23 \rightarrow p_1 = 7$; $11 + 19 \rightarrow p_1 = 11$; $13 + 17 \rightarrow p_1 = 13$

Distinct p_1 values: {3, 5, 7, 11, 13}

Count = 5 → option **(c)**.

56. One man can do as much work in 2 days as a transgender can do in 3 days. A woman does three-fourth the work in a day as a transgender. A contractor hires 76 workers—men, transgenders and women in the ratio 8 : 7 : 4 and pays them ₹8,800 at the end of the day. If wages are proportional to work done, what is the daily wage of a transgender?

- A. ₹200
- B. ₹100

- C. ₹250
- D. ₹150

○ Correct Answer : B

○ **Answer Justification :**

Explanation:

Let transgender's 1-day work = **T**.

Man: 2 days work = transgender's 3 days work

$$2M = 3T \rightarrow M = 3/2 T$$

Woman:

$$W = 3/4 T$$

Total workers = 76, ratio 8 : 7 : 4

Total parts = 19 → each part = $76/19 = 4$

$$\text{Men} = 8 \times 4 = 32$$

$$\text{Transgenders} = 7 \times 4 = 28$$

$$\text{Women} = 4 \times 4 = 16$$

Total work in a day:

$$32(3/2 T) + 28(T) + 16(3/4 T)$$

$$= 48T + 28T + 12T$$

$$= 88T$$

Total wages = ₹8800 for 88T work

So wage for **T** (i.e., one transgender's daily wage):

$$8800 / 88 = 100$$

But wages proportional to work: transgender does **T** in a day → wage = **₹100**.

57. In a party, 60% of the guests are women. If 80% of the guests are married couples (husband–wife pairs) and the rest are unmarried, which statement(s) is/are correct?

1. All men are married.
2. More than 30% women are unmarried.

- Select the correct answer from the following:
 - A. 1 only
 - B. 2 only
 - C. Both 1 and 2
 - D. Neither 1 nor 2

◦ Correct Answer : A

◦ **Answer Justification :**

Take total guests = 100.

Women = 60, Men = 40.

80% are married \Rightarrow 80 guests are married \Rightarrow 40 couples.

So married men = 40 and married women = 40.

Now:

- Men total = 40 and married men = 40 \Rightarrow **all men are married** \Rightarrow Statement 1
- Unmarried women = total women – married women = 60 – 40 = 20 \Rightarrow 20% women are unmarried, **not more than 30%** \Rightarrow Statement 2

So only Statement 1 is correct . Hence option (a) is correct.

58. In a gathering, 55% of the guests are women. If 70% of the guests are married couples and the rest are unmarried, which of the following statement(s) is/are correct?

1. Some men are unmarried.
2. More than 25% women are unmarried.

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

◦ Correct Answer : A

◦ **Answer Justification :**

Explanation:

Assume total guests = 100.

Women = 55

Men = 45

70% are married \rightarrow 70 people married \rightarrow 35 couples.

Married men = 35
Unmarried men = $45 - 35 = 10$

So some men are unmarried.
Statement 1 is correct.

Married women = 35
Unmarried women = $55 - 35 = 20$

Thus 20% women are unmarried, which is not more than 25%.
Statement 2 is incorrect.

Hence, only Statement 1 is correct.

59. The number of squares that can be formed from a set of five parallel lines intersecting another set of eight parallel lines, is

- A. 30
- B. 50
- C. 60
- D. 70

◦ Correct Answer : C

◦ **Answer Justification :**

Explanation:

5 lines one way create $5-1=4$ strips.

8 lines other way create $8-1=7$ strips.

So grid is 4×7 .

Squares possible are limited by smaller side = 4.

Count squares of size:

$$1 \times 1: 4 \times 7 = 28$$

$$2 \times 2: 3 \times 6 = 18$$

$$3 \times 3: 2 \times 5 = 10$$

$$4 \times 4: 1 \times 4 = 4$$

Total squares:

$$28 + 18 + 10 + 4 = 60$$

60. On a typical day, a cinema sells n tickets for p rupees each. Today, the ticket price was increased by 15%, and as a result, the number of tickets sold decreased by 20%. What is today's revenue?

- A. $0.80np$
- B. $0.92np$
- C. $0.96np$

D. $1.15np$

◦ Correct Answer : B

◦ **Answer Justification :**

Explanation:

New price = 115% of $p = 1.15p$

New quantity = 80% of $n = 0.8n$

Revenue today

$= (0.8n)(1.15p) = 0.92np$

So, option (b) is correct.

61. Directions for the following 4 (Four) items:

Read the following two passages and answer the items that follow the passages. Your answer to these items should be based on the passages only.

Passage 1

Across historical contexts, individuals have frequently anchored their sense of purpose in institutions, doctrines or collective enterprises. Military codes, political hierarchies, artistic canons and reform movements have provided structured meanings within which personal identity is shaped. In such settings, evaluative standards are often externalised, with authority located beyond the individual self.

When allegiance to these structures ceases to be mediated by reflective deliberation, the locus of responsibility may shift outward. Conduct is then validated by conformity to shared ideals rather than by inward moral scrutiny. Under such conditions, fidelity to abstract principles may diminish attentiveness to the lived realities of others.

Q. Which one of the following statements best captures the central idea of the passage?

A. Collective institutions are indispensable for sustaining social order.

B. Identification with external frameworks can reshape personal agency and responsibility.

C. Artistic and political traditions demand disciplined adherence.

D. Abstract principles are detached from practical ethical concerns.

◦ Correct Answer : B

◦ **Answer Justification :**

Explanation:

Option (a) is incorrect:

The passage does not argue that institutions are indispensable for social order; it analyses how identification with them influences agency.

Option (c) is incorrect:

Although military, political and artistic examples are cited, the focus is not on their internal requirements but on their effect on personal responsibility.

Option (d) is incorrect:

The passage suggests that abstract ideals may overshadow lived experience, but it does not claim they are inherently detached from ethical concerns.

Option (b) is correct:

The text examines how allegiance to external standards can displace reflective choice and alter the individual's understanding of responsibility.

62. With reference to the above passage 1, consider the following statements:

1. Unreflective commitment to collective frameworks may alter the exercise of personal judgment.
 2. Loyalty to abstract ideals can influence how individuals relate to concrete human situations.
 3. External authority structures invariably eliminate moral agency.
- Which of the above statements is/are valid?
 - A. 1 and 2 only
 - B. 2 and 3 only
 - C. 1 only
 - D. All three

◦ Correct Answer : A

◦ **Answer Justification :**

Explanation:

Statement 1 is valid:

The passage notes that when commitment is detached from reflective choice, personal agency may recede, indicating an effect on individual judgment.

Statement 2 is valid:

It states that loyalty to abstract ideals can overshadow concern for concrete human experience, supporting this statement.

Statement 3 is not valid:

The passage discusses the possibility of diminished agency but does not suggest that moral agency is eliminated in every instance.

63. Passage 2

In designing a political community, attention must be given to its demographic scale and internal composition. A population that exceeds the administrative reach of institutions may strain mechanisms of order, while one that is too limited in number may struggle to sustain defence and governance. Stability is not derived from size alone but from a proportion suited to institutional capacity.

Questions of citizenship also demand calibration. Participation in public affairs, if narrowly confined, may erode civic vitality; if extended without distinction, it may weaken accountability.

Q. Which one of the following statements best captures the central idea of the passage?

- A. Military strength is the primary determinant of political stability.
- B. Political stability depends on maintaining proportion between population scale, participation and institutional capacity.
- C. Citizenship should be granted on restrictive criteria to preserve order.
- D. Smaller states are generally more durable than larger ones.

◦ Correct Answer : B

◦ **Answer Justification :**

Explanation:

Option (a) is incorrect:

Defence is mentioned as one consideration, but it is not presented as the primary determinant of stability.

Option (c) is incorrect:

The passage warns against both excessive restriction and indiscriminate inclusion, rather than advocating restrictive criteria.

Option (d) is incorrect:

The text does not privilege smaller states; it emphasises balance rather than size preference.

Option (b) is correct:

The passage consistently highlights proportional balance—between population size and institutions, and between rulers and participants—as central to stability.

64. Which of the following can be most reasonably inferred from the passage 2?

1. Institutional arrangements may need to correspond with demographic realities.
2. The distribution of political participation can influence administrative effectiveness.

◦ Select the correct answer using the code below:

- A. 1 only
- B. 2 only
- C. Both 1 and 2
- D. Neither 1 nor 2

◦ Correct Answer : C

◦ **Answer Justification :**

Explanation:

Inference 1 is valid:

The passage links population size with the capacity of institutions to maintain order, implying that governance structures must align with demographic conditions.

Inference 2 is valid:

By discussing how both restricted and indiscriminate participation affect responsibility and public spirit, the passage indicates that participation patterns influence administrative functioning.

65. In a college of 800 students, 450 students specialise in Economics and 500 students specialise in Mathematics. If at least 100 students specialise in neither subject, then the number of students specialising in both subjects could be any number from

- A. 150 to 450
- B. 250 to 450
- C. 250 to 500
- D. 100 to 500

◦ Correct Answer : B

◦ **Answer Justification :**

Explanation:

Let overlap = x .

$$|E \cup M| = 450 + 500 - x = 950 - x$$

Students in neither:

$$800 - (950 - x) = x - 150$$

Given at least 100 in neither:

$$x - 150 \geq 100$$

$$x \geq 250$$

Maximum possible overlap:

$$x \leq 450$$

So range is 250 to 450.

66. Consider the following statements when n is a positive integer:

1. $x^n - y^n$ is divisible by $x - y$ for all n .
2. $x^n - y^n$ is divisible by $x + y$ when n is even.
3. $x^n + y^n$ is divisible by $x + y$ when n is even.

◦ How many of the statements given above are correct?

- A. Only one
- B. Only two
- C. All three
- D. None

◦ Correct Answer : B

◦ **Answer Justification :**

Explanation

Statement 1: Always true. $x^n - y^n$ has factor $x - y$ for any positive integer n .

So statement 1 is correct.

Statement 2: True when n is even.

Example: $x^2 - y^2 = (x - y)(x + y)$, so divisible by $x + y$.

Similarly for $x^4 - y^4$, it also contains factor $x + y$.

So statement 2 is correct.

Statement 3: $x^n + y^n$ divisible by $x + y$ when n is even is false.

Example: $x = 2, y = 1, n = 2$: $2^2 + 1^2 = 5$, $x + y = 3$, not divisible.

So statement 3 is incorrect.

Hence, only statements 1 and 2 are correct \rightarrow total = 2.

67. In a library, there are three types of members. The second type pays half the subscription paid by the first and the third pays Rs. 90 less than the second.

There are 50 members of first type, 150 of second, and 300 of the third.

If the total subscription collected is Rs. 24,000, then consider the following statements:

Statement I: The subscription per member paid by the third type is less than Rs. 20.

Statement II: The total subscription paid by the first and the second type is more than Rs. 15,000.

◦ Which of the above statements is/are correct?

A. I only

B. II only

C. Both I and II

D. Neither I nor II

◦ Correct Answer : C

◦ **Answer Justification :**

Explanation:

Let first type subscription = x

Second type = $x/2$

Third type = $x/2 - 90$

Total:

$$50x + 150(x/2) + 300(x/2 - 90) = 24,000$$

$$50x + 75x + 150x - 27,000 = 24,000$$

$$275x = 51,000$$

$$x = 185.45 \text{ (approx)}$$

$$\text{Third type} = x/2 - 90 = 92.73 - 90 = 2.73$$

So Statement I (third < 20) is True.

$$\text{First} + \text{second total} = 50x + 150(x/2) = 50x + 75x = 125x$$

$$= 125 \times 185.45 \approx 23,181$$

This is more than 15,000, so Statement II is also True.

So both statements are true

68. A sum of money is divided among X, Y, and Z so that to each rupee X gets, Y gets 50 paise and Z gets 30 paise. If Z's share is Rs. 45, then the sum of money is:

- A. Rs. 150
- B. Rs. 180
- C. Rs. 270
- D. Rs. 325

◦ Correct Answer : C

◦ **Answer Justification :**

Explanation:

Ratio X : Y : Z = 1 : 0.50 : 0.30

Multiply by 100: 100 : 50 : 30

Simplify by 10: 10 : 5 : 3

Z = 3 parts = 45

1 part = $45/3 = 15$

Total parts = 10 + 5 + 3 = 18

Total sum = 18 × 15 = Rs. 270

69. A store offers a customer the following promotional deals on a product:

- I. Apply successive discounts of 10% and 30%, followed by an additional charge of 5%.
- II. Apply successive discounts of 30% and 10%, followed by an additional charge of 5%.
- III. Add an additional charge of 5% first, then apply successive discounts of 30% and 10%.

◦ Which one of the following is correct?

- A. Only I is the most favorable option for the customer.
- B. Only II is the most favorable option for the customer.
- C. Only III is the most favorable option for the customer.
- D. All the options offer the same benefit to the customer.

◦ Correct Answer : D

◦ **Answer Justification :**

Explanation:

Let the marked price be 100.

Option I:

First 10% discount \rightarrow price becomes 90

Then 30% discount \rightarrow 30% of 90 = 27 \rightarrow price becomes 63

Then add 5% charge \rightarrow 5% of 63 = 3.15 \rightarrow final = 66.15

Option II:

First 30% discount \rightarrow price becomes 70

Then 10% discount \rightarrow 10% of 70 = 7 \rightarrow price becomes 63

Then add 5% charge \rightarrow final = $63 \times 1.05 = 66.15$

So I and II give same final price.

Option III:

First add 5% charge \rightarrow price becomes 105

Then 30% discount \rightarrow 30% of 105 = 31.5 \rightarrow price becomes 73.5

Then 10% discount \rightarrow 10% of 73.5 = 7.35 \rightarrow final = 66.15

All three give 66.15, so actually all are same.

Hence correct option should be (d).

70. A set contains 8 consecutive integers beginning with 5.

Value I = The sum of all the integers

Value II = 8 times the average of all the numbers

◦ Which of the following statements is correct?

- A. Value I < Value II
- B. Value I > Value II
- C. Value I = Value II
- D. Cannot be determined

◦ Correct Answer : C

◦ **Answer Justification :**

Explanation:

The numbers are:

5, 6, 7, 8, 9, 10, 11, 12

Again,

Sum = Average \times Number of terms

Number of terms = 8

So,

Value II = 8 × average

But that is exactly equal to the sum.

Therefore,

Value I = Value II

71. If a sum of money at simple interest becomes double in 18 years, then consider the following statements:

Statement I: The rate of interest is $5\frac{5}{9}\%$ per annum.

Statement II: The amount would become three times in 36 years.

- Which among the following statements is/are correct?
 - A. I only
 - B. II only
 - C. Both I and II
 - D. Neither I nor II

◦ Correct Answer : C

◦ **Answer Justification :**

Explanation:

Double in 18 years means:

$$2 = 1 + (R \times 18) / 100$$

$$18R / 100 = 1$$

$$R = 100 / 18 = 5.5\% = 5\frac{5}{9}\%$$

So Statement I is correct.

For 36 years:

$$A = P (1 + ((100/18) \times 36) / 100)$$

$$= P (1 + 36/18)$$

$$= P (1 + 2) = 3P$$

So Statement II is also correct.

72. Directions for the following 4 (Four) items:

Read the following two passages and answer the items that follow the passages. Your answer to these items should be based on the passages only.

Passage 1

Human beings often move through life absorbed in routines, habits and inherited assumptions. The world appears familiar not because it has been understood, but because it has ceased to provoke astonishment. Philosophy begins when this familiarity is interrupted. To ask why the sky is blue, why justice matters, or what it means to exist is to step outside the taken-for-granted and confront the strangeness of being. Yet such questioning carries discomfort. Certainties that once felt solid begin to loosen. The individual may discover that many beliefs were adopted without examination, accepted through custom rather than reflection. Philosophical inquiry does not immediately provide answers; instead, it unsettles complacency and invites a more conscious engagement with reality.

Q. Which one of the following statements best reflects the central idea of the passage?

- A. Philosophy offers definite solutions to long-standing human problems.
- B. Routine life prevents individuals from acquiring practical skills.
- C. Philosophical thinking begins with questioning what is usually taken for granted.
- D. Doubt inevitably leads to confusion and social instability.

◦ Correct Answer : C

◦ **Answer Justification :**

Explanation:

Option (a) is incorrect:

The passage explicitly notes that philosophy does not immediately provide answers but instead challenges assumptions.

Option (b) is incorrect:

The text discusses habits and assumptions, not practical skills.

Option (d) is incorrect:

While discomfort is mentioned, the passage does not claim that doubt leads to social instability.

Option (c) is correct:

The passage presents philosophy as arising from astonishment and the questioning of what appears familiar and unquestioned.

73. With reference to the above passage, consider the following statements:

1. Philosophical inquiry may unsettle previously held certainties.
2. Many beliefs are adopted without deliberate examination.
3. Philosophy discourages engagement with everyday life.

◦ Which of the above statements is/are valid?

- A. 1 only
- B. 1 and 2 only
- C. 2 and 3 only
- D. All three

◦ Correct Answer : B

◦ **Answer Justification :**

Explanation:

Statement 1 is valid:

The passage indicates that philosophical questioning loosens previously solid certainties.

Statement 2 is valid:

It mentions that many beliefs are accepted through custom rather than reflection.

Statement 3 is not valid:

The passage suggests that philosophy invites a more conscious engagement with reality, not withdrawal from everyday life.

74. Passage 2

Civilizations, in their hunger for progress, fashion instruments that promise mastery over nature. Yet each triumph conceals a residue. The devices that shrink distance and multiply knowledge are born in mines, forged in furnaces and assembled through intricate global chains of labour. When their brief utility expires, they do not vanish; they accumulate. What was once innovation becomes refuse.

Electronic waste is the detritus of accelerated desire. Circuits laced with rare metals and toxic compounds are discarded into landfills or informal recycling yards, where the poorest hands dismantle them at hidden cost. The gains of convenience are thus paired with deferred burdens—environmental contamination, health risks and silent landscapes of obsolescence. A society that measures advancement by novelty must also reckon with the afterlife of its inventions.

Q. Which one of the following statements best reflects the central idea of the passage?

- A. Technological innovation inevitably leads to environmental decline.
- B. The rapid turnover of electronic devices generates concealed ecological and social costs.
- C. Informal recycling is the primary cause of pollution in developing nations.
- D. Modern societies should abandon electronic consumption.

◦ Correct Answer : B

◦ **Answer Justification :**

Explanation:

Option (a) is incorrect:

The passage critiques the consequences of accelerated consumption but does not claim that all technological innovation inevitably results in environmental decline.

Option (c) is incorrect:

Informal recycling is mentioned as part of the problem, yet it is presented as a symptom of broader consumption patterns rather than the primary cause.

Option (d) is incorrect:

The text does not advocate abandoning electronics; it calls attention to the costs embedded in their lifecycle.

Option (b) is correct:

The passage emphasises that the swift obsolescence of electronic devices produces hidden environmental and social burdens, framing e-waste as the by-product of accelerated progress.

75. With reference to the above passage 2, consider the following statements:

1. The environmental impact of electronic devices extends beyond their period of use.
2. Economic inequality influences how electronic waste is managed.
3. Technological advancement has no enduring material consequences.

◦ Which of the above statements is/are valid?

- A. 1 only
- B. 1 and 2 only
- C. 2 and 3 only
- D. All three

◦ Correct Answer : B

◦ **Answer Justification :**

Explanation:

Statement 1 is valid:

The passage notes that devices accumulate as waste after their utility expires, indicating consequences beyond their use phase.

Statement 2 is valid:

It refers to the “poorest hands” dismantling toxic materials, suggesting that economic inequality shapes waste management practices.

Statement 3 is not valid:

The passage explicitly discusses environmental contamination and health risks as lasting material consequences of technological production and disposal.

76. Two numbers are in the ratio 7 : 9. If their HCF is 6, what is the difference between the largest and the smallest number?

- A. 9

- B. 12
- C. 15
- D. 18

◦ Correct Answer : B

◦ **Answer Justification :**

Explanation:

Let the numbers be $7x$ and $9x$.

Since 7 and 9 are co-prime, HCF of $7x$ and $9x = x$.

Given HCF = 6 $\Rightarrow x = 6$

So numbers are:

$7 \times 6 = 42$ and $9 \times 6 = 54$

Difference = $54 - 42 = 12$

So correct value is 12

77. A work is to be completed in 50 days and 150 men start working 6 hours/day. After 20 days, $\frac{1}{4}$ of the work is completed. If after 20 days each man works 8 hours/day and additional men are added to finish on time, then:

Statement I: Additional men required are more than 60.

Statement II: If no additional men are added, it will take 10 extra days.

- Which among the above-mentioned statement/s is/are correct?
 - A. I only
 - B. II only
 - C. Both I and II
 - D. Neither I nor II

◦ Correct Answer : A

◦ **Answer Justification :**

Explanation:

First 20 days work = $150 \times 6 \times 20 = 18000$ man-hours = $\frac{1}{4}$ work

Total work = 72000 man-hours

Remaining = 54000 man-hours

Time left = 30 days, hours/day = 8

Men needed:

$M \times 8 \times 30 = 54000 \Rightarrow M = 54000 / 240 = 225$

Additional men = $225 - 150 = 75 (> 60)$

So, Statement I is correct.

If no extra men: daily work = $150 \times 8 = 1200$ man-hours

Days needed = $54000 / 1200 = 45$ days

Extra days = $45-30=15$ not 10
So, Statement II incorrect
So only I is correct.

78. How many numbers are there from 3000 to 3999 (both included) having at least one digit repeated?

- A. 504
- B. 496
- C. 486
- D. 456

◦ Correct Answer : B

◦ **Answer Justification :**

Explanation:

Total numbers from 3000 to 3999
 $=3999-3000+1=1000$

Now count numbers with no repeated digits.

First digit fixed = 3 → 1 choice

Second digit: any from 0-9 except 3 → 9 choices

Third digit: except first two digits → 8 choices

Fourth digit: except first three digits → 7 choices

So, no-repetition numbers:

$$1 \times 9 \times 8 \times 7 = 504$$

Therefore, numbers with at least one repeated digit:

$$1000 - 504 = 496$$

79. Each digit of a seven-digit number is either 1 or 0 in an alternating manner starting from 1. It is multiplied by itself. What is the sum of the digits of the resulting number?

- A. 14
- B. 16
- C. 18
- D. 20

◦ Correct Answer : B

◦ **Answer Justification :**

Solution:

The number formed by alternating 1 and 0 starting with 1 is:

1010101

Instead of directly squaring it, observe the pattern using smaller numbers.

$$101 \times 101 = 10201$$

$$10101 \times 10101 = 102030201$$

We notice a pattern forming:

1

1 0 2 0 1

1 0 2 0 3 0 2 0 1

The digits increase sequentially toward the middle and then decrease symmetrically.

So,

$$1010101 \times 1010101 = 1020304030201$$

Now find the sum of digits:

Digits are: 1,0,2,0,3,0,4,0,3,0,2,0,1

$$\text{Sum} = 1 + 2 + 3 + 4 + 3 + 2 + 1$$

$$= 2 \times (1 + 2 + 3) + 4$$

$$= 2 \times 6 + 4$$

$$= 12 + 4$$

$$= 16$$

Hence, the correct answer is (b) 16.

80. If $P = +$, $Q = -$, $R = \times$, $S = \div$, insert proper symbols in:

$$36 _ 6 _ 3 _ 4 _ 2 = 20$$

- A. QRPS
- B. RQSP
- C. QSPR
- D. SPRQ

◦ Correct Answer : A

◦ **Answer Justification :**

Explanation:

QRPS means:

$$36 - 6 \times 3 + 4 \div 2$$

$$6 \times 3 = 18$$

$$4 \div 2 = 2$$

$$36 - 18 + 2$$

$$= 18 + 2$$

$$= 20$$

Hence option **(a)** is correct.

INSIGHTSIAS

