

RRB NTPC CBT I Memory Based Paper 17 March 2026 S1

Q.1 Select the triad which follows the same pattern as that followed by the two triads given below. Both triads follow the same pattern.

UM-SK-PR
RJ-PH-MO

- A. MF-LD-IJ
- B. NF-LD-IJ
- C. MF-LE-IJ
- D. NF-LD-IK

Answer: D

Sol: Given:

UM-SK-PR
RJ-PH-MO

1	2	3	4	5	6	7	8	9	10	11	12	13
A	B	C	D	E	F	G	H	I	J	K	L	M
Z	Y	X	W	V	U	T	S	R	Q	P	O	N
26	25	24	23	22	21	20	19	18	17	16	15	14

Logic: 1st letter - 2 = 3rd letter and 3rd letter - 3 = 5th letter
2nd letter - 2 = 4th letter and 4th letter + 7 = 6th letter

For, UM-SK-PR

U - 2 = S, S - 3 = P

M - 2 = K, K + 7 = R

For, RJ-PH-MO

R - 2 = P, P - 3 = M

J - 2 = H, H + 7 = O

Now, we check each options.

Option (a): MF-LD-IJ

M - 2 ≠ L, L - 3 = I

Option (b): NF-LD-IJ

N - 2 = L, L - 3 = I

F - 2 = D, D + 7 ≠ J

Option (c): MF-LE-IJ

M - 2 ≠ L, L - 3 = I

Option (d): NF-LD-IK

N - 2 = L, L - 3 = I

F - 2 = D, D + 7 = K

Thus, correct option is (d).

Q.2 Minimum age required to become a member of the Legislative Assembly is:

- A. 18 years
- B. 25 years
- C. 21 years
- D. No age limit

Answer: B

Sol:

Correct Answer: (B) 25 years

Explanation:

To become a member of the Legislative Assembly in India, a person must be at least 25 years old, as per Article 173 of the Indian Constitution.

Information Booster:

→ Eligibility Criteria: The minimum age requirement for contesting elections to the Legislative Assembly is 25 years.

→ Legislative Assembly: The Legislative Assembly (Vidhan Sabha) is the lower house of the state legislature, where members represent the people of the state.

Q.3 A man goes north for 3 km and reaches point B. Then he turns right, goes 10 km to reach point C. Next, he takes a right turn, goes 5 km to reach point D. Then he goes west for 3 km to reach point E. Finally, he turns right and goes 2 km to reach point F. In which direction is the man now with respect to the starting point? (Note: All turns are 90° turns only unless specified.)

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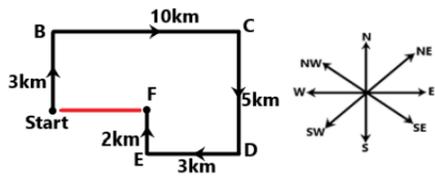
- A. Southwest
- B. West
- C. East
- D. Southeast

Answer: C

Sol: Given:

A man goes north for 3 km and reaches point B.
Then he turns right, goes 10 km to reach point C.
Next, he takes a right turn, goes 5 km to reach point D.
Then he goes west for 3 km to reach point E.
Finally, he turns right and goes 2 km to reach point F.

From the given statements path diagram will be.



In **east** direction is the man now with respect to the starting point.
Thus, correct option is (c).

Q.4 What type of volcano is Barren Island?

- A. Shield volcano
- B. Stratovolcano
- C. Caldera volcano
- D. Cinder cone volcano

Answer: B

Sol: The correct answer is (B) Stratovolcano

Explanation:

- Barren Island is a **stratovolcano**, composed of **lava, volcanic ash, and rock fragments**.
- It has a **large crater** about half a kilometre away from the shore.

Information Booster:

- Stratovolcanoes are also called **composite volcanoes**.
- Famous stratovolcanoes include **Mount Fuji (Japan)** and **Mount Vesuvius (Italy)**.



Q.5 Mediterranean type of climate is characterized by _____.

- A. Dry hot winters and dry cool winters
- B. Dry hot summers and cool wet winters
- C. Wet hot summers and cool dry winters
- D. Wet hot summers and wet cool winters

Answer: B

Sol: The answer is (b).

Mediterranean type of climate is characterized by dry hot summers and cool wet winters. This type of climate is found in regions around the Mediterranean Sea, as well as in parts of California, Australia, and South Africa.

□ Mediterranean climate occurs around the Mediterranean Sea, along the west coast of continents in subtropical latitudes between 30° - 40° latitudes e.g. - Central California, Central Chile, along the coast in south-eastern and south-western Australia.

□ These areas come under the influence of sub-tropical high in summer and westerly wind in winter. Hence, the climate is characterized by a hot, dry summer and mild, rainy winter.

Q.6 This question is based on the five, three-digit numbers given below.

(Left) 745 768 729 716 721 (Right)

(Example: 697 - First digit = 6, second digit = 9 and third digit = 7)

Note: All operations to be done from left to right.

What will be the resultant if the second digit of the second highest number is added to the third digit of the lowest number?

- A. 14
- B. 10
- C. 13
- D. 12

Answer: B

Sol: Given: (Left) 745 768 729 716 721 (Right)

Arrange to find highest and lowest:

716, 721, 729, 745, 768

Second highest = 745

Lowest = 716

Second digit of 745 = 4

Third digit of 716 = 6

Add them: $4 + 6 = 10$

So, **10** will be the resultant if the second digit of the second highest number is added to the third digit of the lowest number.

Thus, correct option is (b).

Q.7 K is the sister of L. L is the daughter of M. M is the wife of N. N is the brother of O. How is K related to O?

- A. Sister's daughter
- B. Daughter's daughter
- C. Son's daughter
- D. Brother's daughter

Answer: D

Sol: Information Given:

K is sister of L

L is daughter of M

M is wife of N

N is brother of O

Trace relations from $L \rightarrow M \rightarrow N \rightarrow O$.

Step-by-step:

L is daughter of M and N (since M is wife of N).

K is sister of L \rightarrow K is also daughter of M and N.

N is brother of O \rightarrow O is sibling of K's father.

Thus K is the **brother's daughter (niece)** of O.

Final Answer:

K is the brother's daughter of O.

Final Correct Option:

(D)

Q.8 Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

1. Some seats are plates.
2. All plates are chairs.

Conclusion:

- I. Some seats are chairs.
- II. All chairs are plates.

- A. Only conclusion (II) follows.
- B. Only conclusion (I) follows.
- C. Both conclusions (I) and (II) follow.
- D. Neither conclusion (I) nor (II) follows.

Answer: B

Sol: Statements:

1. Some seats are plates.
2. All plates are chairs.

From the given statements possible Venn diagram will be.



Conclusion:

- I. Some seats are chairs. (**True**, some seats are plates and all plates are chairs, so that means some seats are chairs).
 II. All chairs are plates. (False, all plates are chairs).
 So, **Only conclusion (I) follows**.
 Thus, correct option is (b).

Q.9 731 metallic cubes with a side length of 3.6 cm are available to be melted and formed into a machine part consisting of two solid cones with a base radius of 5.4 cm, joined at their bases. The heights of the cones are 49 cm and 35 cm, respectively. How many cubes will be surplus after the formation of the two cones? (Take $\pi = 3.14$)

- A. 666
 B. 680
 C. 676
 D. 668

Answer: C

Sol: Given:

Number of cubes = 731

Side of each cube = 3.6 cm

Two cones joined at bases with common radius = 5.4 cm

Heights = 49 cm and 35 cm respectively;

Formula Used:

Volume of cube = side³

Volume of cone = $\frac{1}{3} \pi r^2 h$

Total volume used = volume of both cones

Surplus = total number of cubes – number of cubes used

Solution:

Volume of one cube = $(3.6)^3 = 46.656 \text{ cm}^3$

Radius of both cones = 5.4 cm

Total volume of both cones = $\frac{1}{3} \times 3.14 \times (5.4)^2 [49 + 35]$

= $3.14 \times 29.16 \times 28$

= 2563.75 cm^3

Number of cubes used = $\frac{2563.75}{46.656} \approx 54.95 = 55 \text{ cubes}$

Surplus = $731 - 55 = 676 \text{ cubes}$

Q.10 Which of the following is an open-source spreadsheet software?

- A. Microsoft Excel
 B. Google Sheets
 C. LibreOffice Calc
 D. Apple Numbers

Answer: C

Sol:

LibreOffice Calc is an open-source spreadsheet software developed as part of the LibreOffice suite. Its source code is freely available, allowing users to use, modify, and distribute it without licensing costs. In contrast, Microsoft Excel and Apple Numbers are proprietary software, while Google Sheets is a cloud-based service and not open-source. Therefore, LibreOffice Calc is the correct answer.

Important Key Points:

1. **What is LibreOffice Calc?** It is a spreadsheet application included in the LibreOffice open-source office suite.

2. **Open-Source Nature:** Users can freely access, modify, and redistribute the source code.

3. **Key Features:** Supports formulas, charts, pivot tables, macros, and multiple file formats.

4. **Compatibility:** Can open and save files in Microsoft Excel formats (.xls, .xlsx).

5. **Advantages:**

- Free of cost
- Community-driven development
- No vendor lock-in

6. **Use Cases:** Educational institutions, government offices, personal data analysis, and small businesses.

Knowledge Booster:

- **Why option (a) Microsoft Excel is incorrect?** It is proprietary software requiring a paid license.
- **Why option (b) Google Sheets is incorrect?** Although free to use, it is not open-source; the source code is not publicly available.
- **Why option (d) Apple Numbers is incorrect?** It is proprietary software developed by Apple and restricted to its ecosystem.

Q.11 Sharad, Hemant, Anuj, Pradeep, and Vasant are discussing their assignment while sitting at a circular table facing the centre. Pradeep is sitting to the immediate right of Anuj and Vasant is sitting to the immediate right of Hemant. Sharad is second to the right of Anuj and immediately left of Hemant. Which of the following statement is correct?

- A. Vasant is the immediate neighbour of Sharad and Anuj.
- B. Pradeep is the immediate neighbour of Hemant and Vasant.
- C. Anuj is the immediate neighbour of Hemant and Pradeep.
- D. Hemant is the immediate neighbour of Sharad and Vasant.

Answer: D

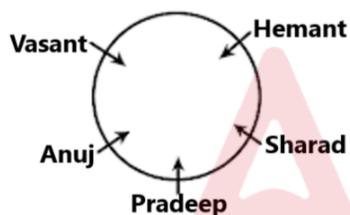
Sol: Given:

Sharad, Hemant, Anuj, Pradeep, and Vasant are discussing their assignment while sitting at a circular table facing the centre.

Pradeep is sitting to the immediate right of Anuj and Vasant is sitting to the immediate right of Hemant.

Sharad is second to the right of Anuj and immediately left of Hemant.

From the given information seating arrangement will be.



So, **Hemant is the immediate neighbour of Sharad and Vasant** is the following statement is correct.

Thus, correct option is (d).

Q.12 Six boxes, L, M, N, O, P and Q, are stacked vertically. Q is placed at the topmost position. N is placed immediately below P. M is placed immediately above P. L is placed second from the bottom. Which box is placed at the bottommost position?

- A. P
- B. O
- C. M
- D. N

Answer: B

Sol: Given:

Six boxes, L, M, N, O, P and Q, are stacked vertically.

Q is placed at the topmost position.

N is placed immediately below P.

M is placed immediately above P.

L is placed second from the bottom.

From the given information arrangement will be.

OrderBoxes

6 Q

5 M

4 P

3 N

2 L

1 O

So, box is placed at the bottommost position.
Thus, correct option is (b).

Q.13 A can complete a piece of work in 24 days and B can complete it in 28 days. If they work on alternate days, starting with B on the first day, then in how many days will the work be finished?

- A. $25\frac{6}{7}$
- B. $25\frac{1}{6}$
- C. $24\frac{6}{7}$
- D. $24\frac{1}{6}$

Answer: A

Sol: Given:

A can complete work in 24 days
B can complete work in 28 days
They work on alternate days starting with B

Solution:

LCM of 24 and 28 = 168 units (assume total work)
A's 1 day work = $168 \div 24 = 7$ units
B's 1 day work = $168 \div 28 = 6$ units
Work in 2 days (B + A) = $6 + 7 = 13$ units

Now, total work = 168 units

13 units done every 2 days

Work done in 12 full cycles (24 days) = $12 \times 13 = 156$ units

Remaining work = $168 - 156 = 12$ units

Next day is B's turn (since last was A)

B does 6 units on 25th day, remaining = $12 - 6 = 6$ units

A does 7 units per day, but only 6 units needed

A will finish in $6 \div 7 = \frac{6}{7}$ day

Total days = $25 + \frac{6}{7} = 25\frac{6}{7}$ days

\therefore The work will be finished in $25\frac{6}{7}$ days

Q.14 Select the triad which follows the same pattern as that followed by the two triads given below. Both triads follow the same pattern.

BH - FM - JR
JP - NU - RZ

- A. HN - LS - PX
- B. BF - EI - HL
- C. RM - TQ - PR
- D. PL - RN - TP

Answer: A

Sol: Given:

BH - FM - JR
JP - NU - RZ

1	2	3	4	5	6	7	8	9	10	11	12	13
A	B	C	D	E	F	G	H	I	J	K	L	M
Z	Y	X	W	V	U	T	S	R	Q	P	O	N
26	25	24	23	22	21	20	19	18	17	16	15	14

Logic: 1st letter + 4 and 2nd letter + 5 place.

For, BH - FM - JR

$B + 4 = F, F + 4 = J$

$H + 5 = M, M + 5 = R$

For, JP - NU - RZ

$J + 4 = N, N + 4 = R$

$P + 5 = U, U + 5 = Z$

Now, we check each options.

Option (a): HN - LS - PX

$H + 4 = L, L + 4 = P$

$N + 5 = S, S + 5 = X$

Option (b): BF - EI - HL

$B + 4 \neq E, E + 4 \neq H$

Option (c): RM - TQ - PR

$R + 4 \neq T, T + 4 \neq P$

Option (d): PL - RN - TP

$P + 4 \neq R, R + 4 \neq T$

Thus, correct option is (a).

Q.15 Which among the following are two neighbouring island countries of India?

- A. Seychelles; Australia
- B. Maldives; Myanmar
- C. Sri Lanka; Maldives
- D. Lakshadweep; Sri Lanka

Answer: C

Sol: Sri Lanka and Maldives are two island countries that are geographically close to India. Sri Lanka is located to the south of India, separated by the Palk Strait, while the Maldives is situated southwest of India in the Indian Ocean.

Important Key Points:

1. **Sri Lanka:** An island nation south of India with a rich cultural heritage.
2. **Maldives:** An archipelago known for its stunning beaches and coral reefs.
3. **Geographical Proximity:** Both countries are strategically located near India.
4. **Economic Ties:** Strong trade relationships with India.
5. **Tourism:** Popular tourist destinations for Indians.
6. **Cultural Exchange:** Shared cultural and historical ties with India.
7. **Maritime Security:** Collaboration with India on maritime security and counter-piracy.

Information Booster:

- Seychelles:** An archipelago in the Indian Ocean, northeast of Madagascar.
- Australia:** A country and continent located southeast of Asia, known for its diverse ecosystems.
- Myanmar:** Located to the east of India, sharing a land border.
- Lakshadweep:** A group of islands in the Arabian Sea, part of India, not an independent country.

Q.16 Which collection of poems written by Sarojini Naidu was first published in 1905?

- A. The Broken Wing

- B. The Golden Threshold
- C. The Bird of Time
- D. Songs of India

Answer: B

Sol: The correct answer is **(B) The Golden Threshold**

Explanation:

- 'The Golden Threshold' was the first collection of poems by Sarojini Naidu, published in London in 1905.
- It introduced her as a major literary voice, earning her the title 'The Nightingale of India' (Bharat Kokila).
- The collection includes famous poems like 'The Palanquin Bearers' and 'Coromandel Fishers', reflecting Indian culture and nature.
- Her poetry is known for its lyrical quality, imagery, and rhythmic beauty.

Information Booster:

- **Political Career:** Apart from being a poet, Sarojini Naidu was a leading figure in the Indian Independence Movement and was the first Indian woman to be the President of the Indian National Congress (1925).
- **Governor:** She was the first woman to become the Governor of an Indian state (United Provinces, now Uttar Pradesh).
- **Literary Influences:** Her work was praised by contemporaries like Edmund Gosse and Arthur Symons for its authentic Indian themes expressed in English verse.

Additional Knowledge:

- **The Broken Wing (Option A):** This collection, subtitled 'Songs of Love, Death and the Spring', was published later in 1917.
- **The Bird of Time (Option C):** Published in 1912, this collection focuses on themes of life, death, and the passing of time.
- **Songs of India (Option D):** While many of her poems are 'Songs of India', it is not the title of her 1905 debut collection.

Q.17 In a certain code language, 'drink fruit juice' is coded as 'if tg sd' and 'bring some fruit' is coded as 'if td za'. How is 'fruit' coded in the given language? (All codes are two-letter codes)

- A. tg
- B. if
- C. td
- D. za

Answer: B

Sol: Given: In a certain code language, 'drink fruit juice' is coded as 'if tg sd' and 'bring some fruit' is coded as 'if td za'.

drink **fruit** juice = **if** tg sd

bring some **fruit** = **if** td za

So, the code of **fruit** is **if**.
Thus, correct option is (b).

Q.18 An amount of ₹658 is divided among three persons in the ratio of 18 : 12 : 2. The difference between the largest and the smallest shares (in ₹) in the distribution is:

- A. 329
- B. 426
- C. 261
- D. 242

Answer: A

Sol: Given:

Total amount = ₹658

Ratio = 18 : 12 : 2

Find the difference between the largest and smallest shares.

Solution:

Total ratio = 18 + 12 + 2 = 32

Largest share (18 parts):

$$\frac{18}{32} \times 658 = \frac{9}{16} \times 658 = 370.125$$

Smallest share (2 parts):

$$\frac{2}{32} \times 658 = \frac{1}{16} \times 658 = 41.125$$

Difference:

$$370.125 - 41.125 = ₹329$$

Q.19 In a certain code language,
 A + B means 'A is the mother of B',
 A - B means 'A is the brother of B',
 A x B means 'A is the wife of B',
 A % B means 'A is the father of B' and
 A # B means 'A is the daughter of B'.
 How is E related to T if 'T - L # Q # P x E'?

- A. Wife's brother
- B. Mother's father
- C. Daughter's husband
- D. Daughter's son

Answer: B

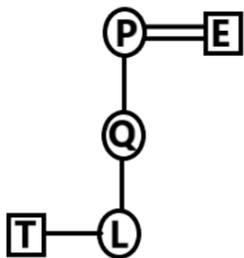
Sol: Given: In a certain code language,
 A + B means 'A is the mother of B',
 If 'T - L # Q # P x E'?

Symbols + - x % #

Relation Mother Brother Wife Father Daughter

Symbol in Diagram	Meaning
- / O	Female
+ / □	Male
=	Married Couple
—	Siblings
	Difference Of Generation

From the given information blood relation diagram will be.



So, E is the **Mother's father** of T.
 Thus, correct option is (b).

Q.20 The Lesser Himalaya is located between:

- A. Trans-Himalaya and Great Himalaya
- B. Shiwalik and Great Himalaya
- C. Trans-Himalaya and Shiwalik
- D. Shiwalik and Outer Himalaya

Answer: B

Sol: Correct Answer: (B) Shiwalik and Great Himalaya

Explanation:

- The Lesser Himalaya, also known as the Himachal Himalaya, forms the middle Himalayan range.
- It lies south of the Great Himalaya (Himadri) and north of the Shiwalik range.
- This region has an average height of 3,500–4,500 metres and consists mainly of highly compressed and altered rocks.
- Important valleys such as Kashmir Valley, Kangra Valley, and Kullu Valley are located in this belt.
- Therefore, the Lesser Himalaya is situated between the Shiwalik and the Great Himalaya.

Conclusion:

- Since the Lesser Himalaya lies between the Shiwalik range and the Great Himalaya,
- Option (B) is the correct answer.

Information Booster:

- The Himalayas are divided into three parallel ranges: Shiwalik, Lesser Himalaya, and Great Himalaya.
- The Lesser Himalaya is more rugged and dissected compared to the Shiwaliks.
- It is rich in forests, hill stations, and mineral resources.
- Famous hill stations like Shimla, Mussoorie, and Nainital are located here.
- This region plays a crucial role in rainfall interception and river formation.

Additional Information (Other Options):

Option (A) Trans-Himalaya and Great Himalaya: The Trans-Himalaya lies north of the Great Himalaya, not adjacent to the Lesser Himalaya.

Option (C) Trans-Himalaya and Shiwalik: These ranges are separated by the Great and Lesser Himalayas, so this pairing is incorrect.

Option (D) Shiwalik and Outer Himalaya: The Shiwalik range itself is the outermost Himalayan range; there is no separate "Outer Himalaya" beyond it.

Q.21 Which of the following does NOT come under Gregor Mendel's Law of Inheritance?

- A. Law of Dominance
- B. Law of Biopics
- C. Law of Independent Assortment
- D. Law of Segregation

Answer: B

Sol: Correct Answer: (B) Law of Biopics

Explanation:

The **Law of Biopics** is not a concept related to genetics or inheritance. It is unrelated to Gregor Mendel's work in genetics.

Mendel's Laws of Inheritance include:

- **Law of Dominance:** States that in a heterozygous individual, one allele (dominant) may mask the expression of another (recessive).
- **Law of Independent Assortment:** States that genes for different traits assort independently of each other during gamete formation.
- **Law of Segregation:** States that each individual has two alleles for each trait, which segregate during gamete formation, so that each gamete carries only one allele for each gene.

Q.22 According to the Citizenship Act 1955, how can citizenship be acquired?

- A. By birth, descent, registration, naturalization or incorporation of territory
- B. By registration and naturalisation only जनक
- C. Only by naturalisation and inclusion of territory
- D. By birth and descent only

Answer: A

Sol: The correct answer is: **(a) By birth, descent, registration, naturalization or incorporation of territory**

Explanation:

- The **Citizenship Act, 1955** provides five legal methods of acquiring Indian citizenship.
- These are: **Birth, Descent, Registration, Naturalisation, and Incorporation of Territory.**
- This Act governs acquisition, termination, and other matters of citizenship in India.

Information Booster:

- Enacted in **1955** under provisions of **Article 11** of the Constitution.
- Citizenship by birth restricted after **2004 Amendment** (parents must not be illegal migrants).
- Naturalisation requires **12 years of residence** (with relaxations in special cases).
- Incorporation of territory example → Sikkim (1975).
- Amendments: 1986, 2003, 2005, 2015, and **CAA 2019**.

Q.23 What is the shortcut key for "Find and Replace" dialog box in MS WORD?

- A. Ctrl + H
- B. Ctrl + Shift + F
- C. Ctrl + R

D. Ctrl + F

Answer: A

- Sol:**
- Ctrl + H opens the "Find and Replace" dialog box in Word.
 - It allows users to quickly search for specific text and replace it with new content.
 - Ctrl + F is used only for finding text, not replacing.
 - This shortcut is widely used to save time when editing large documents.
 - Efficient editing helps in maintaining accuracy and consistency in text documents.

Q.24 Evaluate: $(-9) - (-60) \div (-10) + (-4) \times 8$

- A. -49
- B. -50
- C. -46
- D. -47

Answer: D

Sol: Given:

Expression: $(-9) - (-60) \div (-10) + (-4) \times 8$

Formula Used:

BODMAS Rule.

Solution:

$$(-9) - (-60) \div (-10) + (-4) \times 8$$

$$= (-9) - 6 + (-4) \times 8$$

$$= (-9) - 6 + (-32)$$

$$= -15 + (-32)$$

$$= -47$$

Final Answer

So the correct answer is (d)

Q.25 OPNO is related to STRS in a certain way based on the English alphabetical order. In the same way, DECD is related to HIGH. To which of the given options is JKIJ related, following the same logic?

- A. NPLS
- B. NOMN
- C. NOLN
- D.>NNLN

Answer: B

Sol: Given: OPNO is related to STRS and DECD is related to HIGH with same logic.

1	2	3	4	5	6	7	8	9	10	11	12	13
A	B	C	D	E	F	G	H	I	J	K	L	M
Z	Y	X	W	V	U	T	S	R	Q	P	O	N
26	25	24	23	22	21	20	19	18	17	16	15	14

Logic: Letters are increasing + 4 place.

For, OPNO - STRS

O + 4 = S, P + 4 = T, N + 4 = R, O + 4 = S

For, DECD - HIGH

D + 4 = H, E + 4 = I, C + 4 = G, D + 4 = H

Similarly,

JKIJ - ?

J + 4 = N, K + 4 = O, I + 4 = M, J + 4 = N

So, JKIJ is related to **NOMN**.

Thus, correct option is (b).

Q.26 Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group?

(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

- A. GMOS
- B. UACG
- C. AGIM
- D. BHIM

Answer: D

Sol:

1	2	3	4	5	6	7	8	9	10	11	12	13
A	B	C	D	E	F	G	H	I	J	K	L	M
Z	Y	X	W	V	U	T	S	R	Q	P	O	N
26	25	24	23	22	21	20	19	18	17	16	15	14

Logic: 1st letter + 6 = 2nd letter, 2nd letter + 2 = 3rd letter and 3rd letter + 4 = 4th letter

Now, we check each options.

Option (a): GMOS

G + 6 = M, M + 2 = O, O + 4 = S

Option (b): UACG

U + 6 = A, A + 2 = C, C + 4 = G

Option (c): AGIM

A + 6 = G, G + 2 = I, I + 4 = M

Option (d): BHIM

B + 6 = H, H + 2 ≠ I, I + 4 = M

Thus, correct option is (d).

Q.27 In a certain code language,

'A + B' means 'A is the mother of B',

'A - B' means 'A is the brother of B',

'A × B' means 'A is the wife of B',

'A % B' means 'A is the father of B' and

'A # B' means 'A is the daughter of B'.

How is E related to P if 'E % C # Q # L + P'?

- A. Wife's sister
- B. Mother's mother
- C. Sister's husband
- D. Wife's mother

Answer: C

Sol: Given: In a certain code language,

'A + B' means 'A is the mother of B',

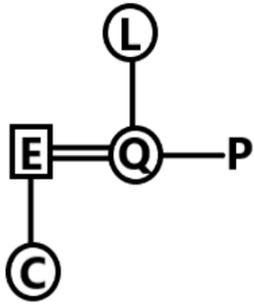
If 'E % C # Q # L + P'?

Symbols + - × % #

RelationMotherBrotherWifeFatherDaughter

Symbol in Diagram	Meaning
- / O	Female
+ / □	Male
=	Married Couple
—	Siblings
	Difference Of Generation

From the given information blood relation diagram will be.



So, E is the **Sister's husband** of P.
Thus, correct option is (c).

Q.28 A pipe can fill a tank in 8 hours. Another pipe can empty the filled tank in 16 hours. If both the pipes are opened simultaneously, then the time (in hours) in which the tank will be three-fourth filled, is:

- A. 48
- B. 36
- C. 24
- D. 12

Answer: D

Sol:

Given:

Filling pipe fills the tank in 8 hours

Emptying pipe empties the tank in 16 hours

Concept Used:

Work and Time

Formula Used:

Net rate = Filling rate – Emptying rate

Solution:

$$\text{Filling rate} = \frac{1}{8} \text{ tank/hour}$$

$$\text{Emptying rate} = \frac{1}{16} \text{ tank/hour}$$

$$\text{Net rate} = \frac{1}{8} - \frac{1}{16}$$

$$= \frac{2 - 1}{16}$$

$$= \frac{1}{16} \text{ tank/hour}$$

$$\text{Time to fill } \frac{3}{4} \text{ tank} = \frac{\frac{3}{4}}{\frac{1}{16}}$$

$$= \frac{3}{4} \times 16$$

$$= 12$$

Final Answer:

12hours

Q.29 In a certain code language, 'book news leaf' is coded as 'rk qh aa' and 'leaf gum boat' is coded as 'vf rk xl'. How is 'leaf' coded in that language?

- A. aa
- B. vf
- C. rk
- D. qh

Answer: C

Sol: Given: In a certain code language, 'book news leaf' is coded as 'rk qh aa' and 'leaf gum boat' is coded as 'vf rk xl'.

book news **leaf** = **rk** qh aa

leaf gum boat = vf **rk** xl

So, the code of 'leaf' is **rk**.

Thus, correct option is (c).

Q.30 A hollow sphere of internal and external diameters 4 cm and 8 cm is melted into cone of base diameter 8 cm. The height of the cone is:

- A. 15 cm
- B. 14 cm
- C. 16 cm
- D. 20 cm

Answer: B

Sol: Given:

Internal diameter of the hollow sphere, $d_1 = 4$ cm

External diameter of the hollow sphere $d_2 = 8$ cm

Diameter of the base of the cone, $d = 8$ cm

Formula Used:

Volume of a hollow sphere = Volume of the outer sphere - Volume of the inner sphere.

$$\text{Volume of a sphere} = \frac{4}{3}\pi r^3$$

$$\text{Volume of a cone} = \frac{1}{3}\pi r^2 h$$

Since the material is melted and reshaped, the volume remains the same.

Solution:

$$\text{Internal radius of the hollow sphere } r_1 = \frac{d_1}{2} = \frac{4}{2} = 2 \text{ cm}$$

$$\text{External radius of the hollow sphere } r_2 = \frac{d_2}{2} = \frac{8}{2} = 4 \text{ cm}$$

$$\text{Radius of the base of the cone, } r = \frac{d}{2} = \frac{8}{2} = 4 \text{ cm}$$

Calculate the volume of the hollow sphere:

$$\text{Volume of the outer sphere} = \frac{4}{3}\pi r_2^3 = \frac{4}{3}\pi(4)^3 = \frac{4}{3}\pi(64) = \frac{256}{3}\pi \text{ cm}^3$$

$$\text{Volume of the inner sphere} = \frac{4}{3}\pi r_1^3 = \frac{4}{3}\pi(2)^3 = \frac{4}{3}\pi(8) = \frac{32}{3}\pi \text{ cm}^3$$

$$\text{Volume of the hollow sphere} = \frac{256}{3}\pi - \frac{32}{3}\pi = \frac{224}{3}\pi \text{ cm}^3$$

$$\text{Volume of the cone} = \frac{1}{3}\pi r^2 h = \frac{1}{3}\pi(4)^2 h = \frac{1}{3}\pi(16)h = \frac{16}{3}\pi h \text{ cm}^3$$

$$\frac{224}{3}\pi = \frac{16}{3}\pi h$$

$$224 = 16h$$

$$h = \frac{224}{16} = 14 \text{ cm}$$

The height of the cone is 14 cm.

Q.31 The sum of 6 times the present age of A and 4 times the present age of B is 156 years. 2 times the present age of B exceeds 9 times the present age of A by 30 years. What will be the sum of the ages (in years) of A and B, 9 years from now?

- A. 50
- B. 51
- C. 46

D. 55

Answer: D

Sol: Given:

Let the present age of A = x years

Let the present age of B = y years

According to the question:

$$6x + 4y = 156$$

$$2y = 9x + 30$$

Formula Used:

Linear equations in two variables

Solution:

From equation (2):

$$2y = 9x + 30$$

$$y = \frac{9x + 30}{2}$$

Substitute this value of y in equation (1):

$$6x + 4\left(\frac{9x + 30}{2}\right) = 156$$

$$6x + 2(9x + 30) = 156$$

$$6x + 18x + 60 = 156$$

$$24x = 96$$

$$x = 4$$

Now substitute $x = 4$ in $y = \frac{9x + 30}{2}$:

$$y = \frac{36 + 30}{2} = \frac{66}{2} = 33$$

Present ages:

Age of A = 4 years

Age of B = 33 years

Sum of present ages

$$= 4 + 33 = 37$$

Sum of ages after 9 years

$$= (4 + 9) + (33 + 9) = 13 + 42 = 55$$

Answer:

55 years

Q.32 Which of the following strategy is not correct in order to have an expansionary impact on fiscal policy?

- A. Public expenditure must be financed by borrowings
- B. Public expenditure must be financed through increased taxes only
- C. Compensatory spending for public investment
- D. Cut in taxes

Answer: B

Sol: Correct Answer: (b) Public expenditure must be financed through increased taxes only

Explanation:

- Expansionary fiscal policy is designed to stimulate aggregate demand by increasing the net flow of funds from the government into the economy.
- If a government increases its spending but simultaneously increases taxes by the same amount to finance it, the expansionary effect is largely neutralized because the money "given" to the economy through spending is "taken back" through taxes.

Additional Knowledge:

- **Option (a):** Borrowing to finance expenditure is a classic expansionary tool as it injects new demand without reducing current private consumption through taxes.
- **Option (c): Compensatory spending** refers to government investment intended to "compensate" for a decline in private investment during a recession.
- **Option (d): A cut in taxes** is a primary tool of expansionary policy as it increases the purchasing power of the public.
- **Crowding Out:** A potential risk of borrowing (Option A) is that it may lead to higher interest rates, which can sometimes reduce private investment.

Q.33 Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

1. All caves are houses.
2. All houses are dens.
3. All dens are mansions.

Conclusions:

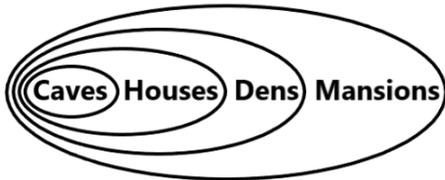
- I. All caves are mansions.
 - II. Some mansions are houses.
- A. Only conclusion (II) follows
 - B. Neither conclusion (I) nor (II) follows
 - C. Only conclusion (I) follows
 - D. Both conclusions (I) and (II) follow

Answer: D

Sol: Statements:

1. All caves are houses.
2. All houses are dens.
3. All dens are mansions.

From the given statements possible Venn diagram will be.



Conclusions:

- I. All caves are mansions. (**True**, all caves are houses, all houses are dens and all dens are mansion, so that means all caves are mansions).
 - II. Some mansions are houses. (**True**, all houses are dens and all dens are houses, so that means some mansions are houses).
- So, **Both conclusions (I) and (II) follow.**
Thus, correct option is (d).

Q.34 As per census of India 2011, which of the following States registered negative value in population growth rate during the period 2001-2011?

- A. Manipur
- B. Nagaland
- C. Tripura
- D. Meghalaya

Answer: B

Sol: Correct answer: (b) Nagaland

Introduction:

As per the **2011 Census of India, Nagaland** recorded a negative population growth rate during 2001–2011, indicating that its population declined over the decade.

Information Booster:

- **Nagaland** - Experienced **population decline (-0.58%)** due to **out-migration, lower fertility rates, and demographic factors.**
- Negative growth reflects **more deaths and out-migration than births or in-migration** in certain districts.

Additional Knowledge:

- **Manipur, Tripura, Meghalaya:** Recorded positive population growth during the same period.
- Negative growth is rare in Indian states and usually linked to migration patterns and socio-economic conditions.

Q.35 Six people, A, B, C, D, E and F, are sitting in a row, facing north. Only two people sit to the left of E. Only one person sits between A and C. F sits to the immediate left of E. A sits to the immediate right of D. C sits third to the right of B. Who sits at the extreme left end of the row?

- A. B
- B. E
- C. D
- D. C

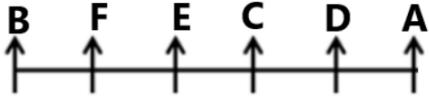
Answer: A

Sol: Given:

- Six people, A, B, C, D, E and F, are sitting in a row, facing north.
- Only two people sit to the left of E.
- Only one person sits between A and C.
- F sits to the immediate left of E.
- A sits to the immediate right of D.

C sits third to the right of B.

From the given information seating arrangement will be.



So, **B** sits at the extreme left end of the row.
Thus, correct option is (a).

Q.36 A sells a MacBook to B at a loss of 60% and B sells the MacBook to C at a profit of 25%. If C purchased the MacBook for ₹47,236, then what was the cost (in ₹) of the MacBook for A?

- A. 94,472
- B. 94,468
- C. 94,478
- D. 94,467

Answer: A

Sol: Given:

A sells to B at a loss of 60%.

B sells to C at a profit of 25%.

C's purchase price (Selling Price of B) = ₹47,236.

Formula Used:

$$\text{Profit \%} = \frac{\text{Profit}}{\text{CP}} \times 100$$

$$\text{Loss \%} = \frac{\text{loss}}{\text{CP}} \times 100$$

Solution:

B sells to C at a profit of 25%

So, B's Cost Price;

$$= \frac{47236}{125} \times 100 = \frac{47236 \times 4}{5}$$

Now, A sells to B at a loss of 60%

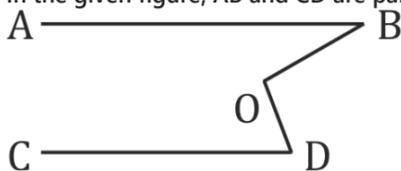
A's Selling Price = B's Cost Price

$$\text{A's Cost Price} = \frac{47236 \times 4 \times 100}{5 \times 40}$$

$$= 47236 \times 2$$

$$= ₹94472$$

Q.37 In the given figure, AB and CD are parallel lines. O is a point such that angle CDO = 70° and angle DOB = 100°. Find angle ABO.



- A. 80°
- B. 50°
- C. 30°
- D. 60°

Answer: C

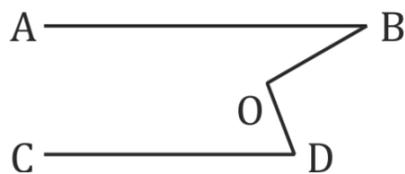
Sol: Given:

$AB \parallel CD$. O is a point such

$$\angle CDO = 70^\circ$$

$$\angle DOB = 100^\circ$$

Solution:



For Angle COD:

Since, $AB \parallel CD$ $\angle CDO = 70^\circ$, $\angle COD = 70^\circ$ due to alternate interior angles.

$\angle AOB$:

$\angle AOB$ is supplementary to $\angle DOB$.
Therefore, $\angle AOB = 180^\circ - 100^\circ = 80^\circ$.

$\angle ABO$: In triangle AOB, the sum of the interior angles is 180° .

So, $\angle ABO = 180^\circ - (\angle AOB + \angle BAO)$.
We know $\angle AOB = 80^\circ$.

Since AB and CD are parallel, $\angle BAO = \angle COD = 70^\circ$.
Therefore, $\angle ABO = 180^\circ - (80^\circ + 70^\circ) = 30^\circ$.

Therefore, the $\angle ABO$ is 30° .

Option (c) is right answer.

Q.38 After the First War of Independence, Mughal Emperor Bahadur Shah Zafar was exiled to

- A. Rangoon
- B. Port Blair
- C. Kabul
- D. London

Answer: A

Sol: The correct answer is option (a) **Rangoon**.

Explanation

After the **First War of Independence** in 1857, also known as the **Indian Rebellion of 1857**, the last Mughal Emperor, **Bahadur Shah Zafar**, was captured by the British forces. The British, after suppressing the rebellion, exiled Bahadur Shah Zafar to **Rangoon** (now Yangon, Myanmar), where he spent the remaining years of his life. He was accused of being a symbolic leader of the uprising, though he did not play a significant direct role in the fighting.

The British had declared the Mughal Empire abolished and took punitive actions against those involved in the rebellion. The Emperor was arrested, tried, and sentenced to life imprisonment. His exile to Rangoon was part of the British efforts to completely dismantle the Mughal Empire's influence in India.

Information Booster

- **Bahadur Shah Zafar**, the last Mughal Emperor, was exiled to **Rangoon** after the **First War of Independence** in 1857.
- He was captured by the British after the rebellion and tried for his involvement in the uprising.
- Zafar lived in **Rangoon** until his death in 1862.
- The British abolished the Mughal Empire after the suppression of the 1857 revolt, marking the end of over 300 years of Mughal rule in India.

Q.39 How many fundamental duties were added by the 42nd Constitutional Amendment Act 1976?

- A. Ten
- B. Eleven
- C. Fifteen
- D. Thirteen

Answer: A

Sol: The correct answer is (a) Ten.

- The idea of Fundamental Duties is inspired from the Constitution of Russia (erstwhile USSR).
- They were added as Part IV-A of the Constitution by the 42nd Constitutional Amendment Act, 1976 on the recommendations of the Swaran Singh Committee.
- **Originally they were 10 in number, one more duty was added through the 86th Constitutional Amendment Act, 2002.**

Information Booster:

Fundamental Duties listed in Article 51A:

1. To abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem,
2. To cherish and follow the noble ideals that inspired the national struggle for freedom,
3. To uphold and protect the sovereignty, unity and integrity of India,
4. To defend the country and render national service when called upon to do so,
5. To promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diversities and to renounce practices derogatory to the dignity of women,
6. To value and preserve the rich heritage of the country's composite culture,
7. To protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures,
8. To develop scientific temper, humanism and the spirit of inquiry and reform,
9. To safeguard public property and to abjure violence,
10. To strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievement, and
11. To provide opportunities for education to his child or ward between the age of six and fourteen years **(added by the 86th Constitutional Amendment Act, 2002).**

Q.40 Find the median from the following data.

Age in years 15 - 2525 - 3535 - 4545 - 5555 - 6565 - 7575 - 85

No. of patients 11 18 22 30 40 16 33

- A. 45 years
- B. 74 years
- C. 56 years
- D. 58 years

Answer: C

Sol: Given:

Class Frequency Cumulative frequency

15 – 25	11	11
25 – 35	18	29
35 – 45	22	51
45 – 55	30	81
55 – 65	40	121
65 – 75	16	137
75 – 85	33	170

Formula Used:

Median for grouped data :

$$\text{Median} = L + \left(\frac{\frac{N}{2} - F}{f} \right) \times h$$

Where:

L = lower boundary of the median class

N = total frequency

F = cumulative frequency before the median class

f = frequency of the median class

h = class width

Solution:

Total Frequency (N) = 11 + 18 + 22 + 30 + 40 + 16 + 33 = 170

$$\text{Median Position} = \frac{N}{2} = \frac{170}{2} = 85$$

Median Class: 55 – 65

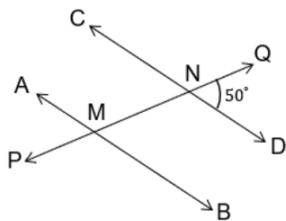
Now, L = 55, F = 81, f = 40, h = 10

$$\text{Median} = 55 + \left(\frac{85 - 81}{40} \right) \times 10$$

$$= 55 + \left(\frac{4}{40} \right) \times 10$$

$$= 55 + 1 = 56 \text{ years}$$

Q.41 In the given figure, AB and CD are two parallel lines and PQ is a transversal line. Find the measure of $\angle PMB$.



- A. 50°
- B. 100°
- C. 130°
- D. 120°

Answer: C

Sol: Given:

AB and CD are parallel lines.

PQ is a transversal line.

Concept Used:

Alternate interior angles are equal.

Corresponding angles are equal.

Vertically opposite angles are equal.

Angles on a straight line sum to 180° .

Solution:

We need to find the measure of $\angle PMB$.

$$\angle QND = 50^\circ \text{ (Given)}$$

Using corresponding angles

$\angle QMB$ and $\angle QND$ are corresponding angles. As $AB \parallel CD$, the corresponding angles are equal.

$$\angle QMB = \angle QND$$

$\angle QND$ and $\angle PND$ are angles on a straight line. Thus, their sum is 180° .

$$\angle QND + \angle PND = 180^\circ$$

$$\angle PND + 50^\circ = 180^\circ$$

$$\angle PND = 180^\circ - 50^\circ = 130^\circ$$

$$\angle PMB = 130^\circ$$

Q.42 "Swaraj is my birthright and I shall have it." Who gave this slogan?

- A. Gandhi
- B. Tilak
- C. Gokhale
- D. Nehru

Answer: B

Sol:

Correct answer: (B) Tilak

Explanation:

Bal Gangadhar Tilak gave this slogan which became a rallying cry for Indian freedom fighters.

Information Booster:

→ Known as "Father of Indian Unrest" (by Valentine Chirol).

→ Edited newspapers: Kesari (Marathi), The Mahratta (English).

Popularized Ganesh Utsav and Shivaji festival.

Additional Information:

Option (A) Gandhi → "Do or Die" (Quit India).

Option (C) Gokhale → Gandhi's political guru, moderate leader.

Option (D) Nehru → "Tryst with Destiny" speech (1947).

Q.43 A, B and C started a business investing ₹1,340, ₹1,100 and ₹2,440, respectively. If B's share in the profit earned by them is ₹814, what is the difference in the profit (in ₹) earned by A and C?

- A. ₹811
- B. ₹815
- C. ₹816
- D. ₹814

Answer: D

Sol: Given:

Investments of A = ₹1,340, B = ₹1,100, and C = ₹2,440.

B's profit share = ₹814.

Solution:

Ratio of their investments = 1340 : 1100 : 2440.

Divide by 20 to simplify the ratio:

A : B : C = 67 : 55 : 122.

The ratio of their profit shares will be the same as their investment ratio.

Let the profit shares be 67x, 55x, and 122x.

B's profit = 55x = 814.

$$x = \frac{814}{55} = 14.8.$$

Difference in profit between A and C = 122x - 67x = 55x.

Since we need the value of 55x and we already know 55x = 814, the difference is ₹814.

Final Answer

So the correct answer is (d)

Q.44 All 58 people are standing in a row facing north. Rizwan is 23rd from the right end, while Aman is 19th from the left end. How many people are there between Rizwan and Aman?

- A. 13
- B. 15
- C. 14
- D. 16

Answer: D

Sol: Given:

All 58 people are standing in a row facing north.

Rizwan is 23rd from the right end, while Aman is 19th from the left end.

Solution:

Total people in the row = 58 (all facing north)

Convert Rizwan's position to left side:

Rizwan is 23rd from the right.

Position from the left = 58 - 23 + 1 = 36

Rizwan is 36th from the left.

Aman is 19th from the left.

Difference of positions: 36 - 19 = 17

People between them: 17 - 1 = 16

So, **16** people are there between Rizwan and Aman.

Thus, correct option is (d).

Q.45 A and B walk around a circular path of 10 km in circumference, starting together from the same point in the same direction. If their speeds are 3 km/h and 2 km/h respectively, after how many hours will they be again at the starting point?

- A. 5 h

- B. 2 h
- C. 10 h
- D. 3 h

Answer: C

Sol: Given:

Circumference of the circular path = 10 km
 Speed of A = 3 km/h
 Speed of B = 2 km/h
 Both start together from the same point in the same direction.

Formula Used:

$$\text{Time taken to complete one full round} = \frac{\text{Circumference}}{\text{Speed}}$$

Solution:

$$\text{Time}_A = \frac{\text{Circumference}}{\text{Speed}_A} = \frac{10}{3} \text{ hours}$$

$$\text{Time}_B = \frac{\text{Circumference}}{\text{Speed}_B} = \frac{10}{2} = 5 \text{ hours}$$

$$\text{Time}_A = \frac{10}{3} \text{ hours, } \text{Time}_B = 5 = \frac{15}{3} \text{ hours}$$

$$\text{LCM of } \frac{10}{3} \text{ and } \frac{15}{3} \text{ is } \frac{\text{LCM}(10, 15)}{3} = \frac{30}{3} = 10 \text{ hours.}$$

They will both be at the starting point together after 10 hours.

Q.46 What smallest number should be added to 4519 so that the sum is completely divisible by 30?

- A. 6
- B. 10
- C. 13
- D. 11

Answer: D

Sol: Given:

Number = 4519

We need to find the smallest number to be added so that the sum is completely divisible by 30.

Concept Used:

A number divisible by 30 must also be divisible by 2, 3, and 5.

Solution:

Dividing 4519 by 30 gives 150 as quotient and remainder 19

$$\text{Number to be added} = 30 - 19 = 11$$

Q.47 According to clause (2) of Article 239A, any law created by the Parliament for Puducherry shall NOT be considered an amendment to the Constitution for the purposes of which Article?

- A. Article 371
- B. Article 368
- C. Article 370
- D. Article 356

Answer: B

Sol: The correct answer is (B) **Article 368**.

Explanation:

Clause (2) of **Article 239A** of the Indian Constitution specifies that any law made by Parliament for **Puducherry** shall not be considered an amendment to the Constitution for the purposes of **Article 368**. Article 368 deals with the procedure for the amendment of the Constitution, and the law for Puducherry does not require an amendment to the Constitution under this Article.

Information Booster:

- **Article 239A:** It deals with the administration of **Union Territories** like Puducherry, where the Parliament has special powers to legislate.
- **Article 368:** Specifies the procedure for amending the Constitution, but in the case of laws made for Puducherry, it is not applicable for amendments under this clause.

Additional Information:

- **Article 371:** Deals with special provisions for certain states and is not relevant to this context.
- **Article 370:** Pertains to the special status of Jammu and Kashmir, which no longer applies after the abrogation in 2019.
- **Article 356:** Deals with the imposition of President's Rule in a state, which is unrelated to the clause for Puducherry.

Q.48 The Faraizi Movement was a religious reform movement of the 19th century in _____.

- A. Bengal
- B. Maharashtra
- C. Rajasthan
- D. Gujarat

Answer: A

Sol:

The correct answer is (a) Bengal

Explanation:

- The **Faraizi Movement** originated in **Bengal** during the early 19th century.
- It was led by **Haji Shariatullah**.
- The movement aimed at reforming Islamic practices and opposing un-Islamic customs.
- It also resisted British indigo planters and zamindari oppression.

Information Booster:

- The word **Faraizi** comes from *Faraiz*, meaning religious duties.
- The movement later spread under **Dudu Miyan**.

Additional Knowledge:

- It played both a **religious and socio-economic role** in Bengal.

Q.49 The fourth state of matter 'PLASMA' is a/an _____.

- A. neutral gas with fewer electrons
- B. state between liquid and gas
- C. ionised gas with ions and electrons in an almost equal number
- D. ionized gas

Answer: C

Sol: The correct answer is (c) - Ionised gas with ions and electrons in an almost equal number

Explanation:

- **Plasma** is a state of matter where the gas is **ionized** to such an extent that it contains **charged particles — ions** (positively charged particles) and **electrons** (negatively charged particles) — in nearly equal numbers.
- This makes plasma electrically conductive and highly responsive to electromagnetic fields. Plasma is often referred to as the **fourth state of matter**, after solid, liquid, and gas.
- In plasma, the atoms or molecules have enough energy (from heat or electric fields) to ionize, meaning some electrons are knocked out of atoms or molecules, creating a **soup of positively charged ions and free electrons**.

Information Booster:

- **Plasma Characteristics:**
 - **Ionization:** Plasma is created when gases are energized to the point where atoms or molecules lose electrons, resulting in a mix of **positive ions** and **free electrons**.
 - **Electrical Conductivity:** Due to the presence of free electrons and ions, plasma is an excellent conductor of electricity and can generate magnetic fields.

- **Occurrence:** Plasma is commonly found in stars (including the sun), lightning, and certain types of laboratory equipment like plasma TVs and arc welding tools.
- **Plasma in the Universe:**
 - About **99% of the visible universe** is in the plasma state, including stars, the sun, and nebulae, where the temperature and energy are high enough to ionize gases.

Q.50 Which is not the objective of Article 39 of the Constitution of India ?

- A. Protection of childhood and youth against exploitation.
- B. Protection of childhood and youth against moral and material abandonment.
- C. Protection of the tender age of children from abuse.
- D. Protection of children from (medicines) having negative effects on their health.

Answer: D

Sol: The correct answer is **(d) Protection of children from (medicines) having negative effects on their health.**

While the Constitution of India is deeply concerned with public health, the specific prohibition regarding "medicines" or "intoxicating drugs" is found in Article 47, not Article 39. Article 39 focuses primarily on socio-economic justice, the distribution of resources, and the protection of vulnerable groups (women and children) from labor and exploitation.

Information Booster: Understanding Article 39

Article 39 is a key Socialist Directive Principle. It outlines specific policies the State should follow to ensure a just social order.

Article 39(e): Mandates that the health and strength of workers (men and women) and the tender age of children are not abused, and that citizens are not forced by economic necessity to enter vocations unsuited to their age or strength.

Article 39(f): This clause was modified by the 42nd Amendment (1976). it directs the State to ensure that children are given opportunities and facilities to develop in a healthy manner and in conditions of freedom and dignity, and that childhood and youth are protected against exploitation and against moral and material abandonment.

Q.51 If 1 is added to each odd digit and 2 is subtracted from each even digit in the number 8341756, then how many digits will appear more than once in the new number thus formed?

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

Answer: D

Sol: Given: 8341756

Rule:

Add 1 to each odd digit

Subtract 2 from each even digit

DigitTypeOperationNew Digit

8 Even 8 - 2 6

3 Odd 3 + 1 4

4 Even 4 - 2 2

1 Odd 1 + 1 2

7 Odd 7 + 1 8

5 Odd $5 + 1 = 6$

6 Even $6 - 2 = 4$

New number: 6422864

Digits: 6, 4, 2, 2, 8, 6, 4

Repeated digits are: 6, 4, 2

Total digits appearing more than once = 3

So, **three** digits will appear more than once in the new number thus formed.

Thus, correct option is (d).

Q.52 Harisena, the author of Prayag Prashasti, was the court poet of which of the following Gupta emperors?

- A. Kumaragupta I
- B. Skandagupta
- C. Ramagupta
- D. Samudraguta

Answer: D

Sol: The correct answer is **(d) Samudragupta**.

- Harisena, the author of the **Prayag Prashasti** (also known as the Allahabad Pillar Inscription), was the court poet and minister of Samudragupta, one of the most notable Gupta emperors.
- The Prayag Prashasti is an inscription that glorifies the achievements of Samudragupta, describing his extensive military conquests, diplomatic alliances, and patronage of the arts.
- This inscription, composed by Harisena, provides valuable insights into the political and cultural accomplishments of Samudragupta's reign and the prosperity of the Gupta Empire.

Additional Information:

- Samudragupta, (c. 335–375 CE) was the second emperor of the Gupta Empire of ancient India, and is regarded among the greatest rulers of India.
- As a son of the Gupta emperor Chandragupta I and the Licchavi princess Kumaradevi, he greatly expanded his dynasty's political and military power.
- The Allahabad Pillar inscription, a Prashasti (eulogy) composed by his courtier Harisena, credits him with extensive military conquests. It suggests that he defeated several kings of northern India, and annexed their territories into his empire.
- He also marched along the south-eastern coast of India, advancing as far south as Kanchipuram in the Pallava kingdom.

Q.53 Who is the author of 'Rajatarangini'?

- A. Kalidasa
- B. Chand Bardai
- C. Kalhana
- D. Jayadeva

Answer: C

Sol: The correct answer is: **(C) Kalhana**

Explanation:

- **Kalhana** is the author of the famous historical work '**Rajatarangini**', written in **12th century CE**.
- It is a significant Sanskrit text that chronicles the history of the **kings of Kashmir** from ancient times to the author's own period.

Information Booster:

- The book is divided into **eight books**, covering the history of Kashmir from ancient times up to the **12th century**.
- The text is written in **Sanskrit** and is highly regarded for its **literary value** and **historical accuracy**.

Additional Information:

- **Kalidasa:** Kalidasa was a renowned classical Sanskrit playwright and poet, famous for works like **Shakuntala** and **Meghaduta**.
- **Chand Bardai:** Chand Bardai is the author of the epic **Prithviraj Raso**.
- **Jayadeva:** Jayadeva is famous for composing the **Gita Govinda**, a devotional work dedicated to **Lord Krishna**.

Q.54 If $(a + b) : (b + c) : (c + a)$ is $6 : 7 : 8$ and also $a + b + c = 14$, then what is the value of c ?

- A. 6

- B. 8
- C. 12
- D. 10

Answer: A

Sol: Given:

The ratio $(a+b):(b+c):(c+a) = 6 : 7 : 8$

The sum $a + b + c = 14$

We need to find the value of c .

Solution:

Now,

$$(a + b) + (b + c) + (c + a) = 6k + 7k + 8k$$

$$2a + 2b + 2c = 21k$$

$$21k = 28$$

$$k = \frac{28}{21} = \frac{4}{3}$$

$$a + b = 6 \times \frac{4}{3} = 8$$

Now, $a + b + c = 14$:

$$c = 14 - 8 = 6$$

Option (A) is right.

Q.55 A dishonest shopkeeper claims that he sells rock salt at ₹17/kg, which costs him ₹20/kg. But he gives 567 g instead of 1134 g. What is his profit percentage?

- A. Profit of 68%
- B. Profit of 73%
- C. Profit of 70%
- D. Profit of 69%

Answer: C

Sol: Given

Cost Price (CP) = 20 per kg
 Selling Price (SP) = 17 per kg
 Actual weight given = 567 g
 Claimed weight = 1134 g

Concept Used

False weight increases the effective selling price per kg

Formula Used

$$\text{Profit \%} = \frac{\text{SP} - \text{CP}}{\text{CP}} \times 100$$

Solution

$$1134 = 2 \times 567$$

$$\text{For 567 g, SP} = 17$$

$$\text{For 1134 g, SP} = 17 \times 2 = 34$$

$$\text{Effective SP per kg} = 34$$

$$\text{CP per kg} = 20$$

$$\text{Profit} = 34 - 20 = 14$$

$$\text{Profit \%} = \frac{14}{20} \times 100 = 70$$

Final Answer

70%

Q.56 Seven boxes, A, B, C, D, E, F and G, are kept one over the other, but not necessarily in the same order. Only three boxes are kept below D. Only two boxes are kept between D and E. Only C is kept immediately above A. F is kept at some place below B and at some place above G. How many boxes are kept below G?

- A. 4
- B. 1
- C. 2
- D. 3

Answer: B

Sol: Given:

Seven boxes, A, B, C, D, E, F and G, are kept one over the other, but not necessarily in the same order.
 Only three boxes are kept below D.
 Only two boxes are kept between D and E.
 Only C is kept immediately above A.
 F is kept at some place below B and at some place above G.

From the given information arrangement will be.

OrderBoxes

- 7 C
- 6 A
- 5 B
- 4 D
- 3 F
- 2 G
- 1 E



So, **1** boxes are kept below G.
 Thus, correct option is (b).

Q.57 The Equator does NOT pass through which of the following countries?

- A. Kenya
- B. Mexico
- C. Indonesia
- D. Brazil

Answer: B

Sol:

From the given options the Equator passes through Kenya, Indonesia, and Brazil, but it does not pass through Mexico.
 • The equator passes through 13 countries: Ecuador, Colombia, Brazil, Sao Tome & Principe, Gabon, Republic of the Congo, Democratic Republic of the Congo, Uganda, Kenya, Somalia, Maldives, Indonesia, and Kiribati.
 • Some countries, such as Ecuador and Colombia, are located entirely on the equator, while others, such as Brazil and Indonesia, are only partially located on the equator.

Q.58 An item marked for Rs. 39,250 is sold at Rs. 32,499 after allowing two successive discounts of $x\%$ and 10% . Find the value of x .

- A. 9
- B. 10
- C. 12
- D. 8

Answer: D

Sol: Given:

Marked Price (MP) = ₹39,250

Selling Price (SP) = ₹32,499

Two successive discounts: $x\%$ and 10%

Formula Used:

Successive discount formula

$$SP = MP \times \left(1 - \frac{D_1}{100}\right) \times \left(1 - \frac{D_2}{100}\right)$$

Solution:

By Formula;

$$32,499 = 39,250 \times \left(1 - \frac{x}{100}\right) \times \left(1 - \frac{10}{100}\right)$$

$$32,499 = 39,250 \times \left(1 - \frac{x}{100}\right) \times \frac{9}{10}$$

$$32,499 = 35,325 \times \left(1 - \frac{x}{100}\right)$$

$$1 - \frac{x}{100} = \frac{32,499}{35,325}$$

$$1 - \frac{x}{100} = \frac{23}{25}$$

$$-\frac{x}{100} = \frac{23}{25} - 1$$

$$-\frac{x}{100} = -\frac{2}{25}$$

$$x = \frac{2}{25} \times 100 = 8\%$$

Q.59 Warner starts from Point A and drives 78 km towards the west. He then takes a right turn, drives 79 km, turns right and drives 80 km. He then takes a right turn and drives 90 km. He takes a final right turn, drives 2 km and stops at Point P. How far (shortest distance) and towards which direction should he drive in order to reach Point A again? (All turns are 90-degree turns only unless specified.)

- A. 11 km to the north
- B. 10 km to the north
- C. 13 km to the south
- D. 12 km to the south

Answer: A

Sol: Given:

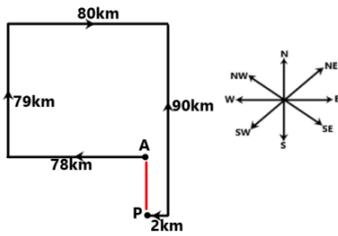
Warner starts from Point A and drives 78 km towards the west.

He then takes a right turn, drives 79 km, turns right and drives 80 km.

He then takes a right turn and drives 90 km.

He takes a final right turn, drives 2 km and stops at Point P.

From the given statements path diagram will be.



$90 - 79 = 11 \text{ km}$

So, he far **11 km** and towards **north** direction should he drive in order to reach Point A again.
Thus, correct option is (a).

Q.60 In a certain code language, 'TUNE' is coded as '5279' and 'WAIT' is coded as '1428'. What is the code for 'T' in the given code language?

- A. 1
- B. 2
- C. 8
- D. 5

Answer: B

Sol: Given: In a certain code language, 'TUNE' is coded as '5279' and 'WAIT' is coded as '1428'.

T U N E = 5 2 7 9

W A I T = 1 4 2 8

So, the code of **T** is **2**.
Thus, correct option is (b).

Q.61 The 2nd WHO Traditional Medicine Global Summit (2025) will be held at which location?

- A. Pragati Maidan, New Delhi
- B. Bharat Mandapam, New Delhi
- C. Vigyan Bhawan, New Delhi
- D. Kochi International Convention Centre

Answer: B

Sol: The correct answer is (b) Bharat Mandapam, New Delhi.

- The 2nd WHO Traditional Medicine Global Summit is scheduled from **17–19 December 2025**.
- It is being hosted jointly by **WHO** and the **Ministry of AYUSH, Government of India**.

Information Booster:

- **Theme:** "Restoring Balance: The Science and Practice of Health and Well-being."
- Expected participation: **Around 7,000 delegates (Hybrid mode)**.
- Linked to **WHO Global Traditional Medicine Strategy 2025–2034**.
- Focus: Integrating **evidence-based traditional medicine** into modern health systems.

Additional Knowledge:

- **1st WHO Traditional Medicine Global Summit (2023)** was held in **Gujarat**.
- Ministry of AYUSH established in **2014**.
- AYUSH systems include **Ayurveda, Yoga, Unani, Siddha, Sowa-Rigpa, Homeopathy**.

Q.62 Each of A, B, C, D, E and F has an exam on a different day of a week, starting from Monday and ending on Saturday of the same week. B has his exam before C. C has his exam after D but before E. A has his exam on Monday. F has his exam after E. D does not have his exam on Tuesday. Who has his exam on Wednesday?

- A. B
- B. C
- C. D
- D. E

Answer: C

Sol: Given:

Each of A, B, C, D, E and F has an exam on a different day of a week, starting from Monday and ending on Saturday of the same week.

B has his exam before C.

C has his exam after D but before E.

A has his exam on Monday.

F has his exam after E.

D does not have his exam on Tuesday.

Day	Person
-----	--------

Monday A

Tuesday B

Wednesday D

Thursday C

Friday E

Saturday F

So, **D** has his exam on Wednesday.

Thus, the correct option is: (c)

Q.63 The "Baisagu" festival is celebrated by which ethnic group of Assam:

- A. Bodo
- B. Deori
- C. Dimasa
- D. Rabha

Answer: A

Sol: Correct Answer: (a) Bodo

Explanation (Detailed):

Baisagu is the **traditional New Year festival of the Bodo community** of Assam. It marks the **beginning of the agricultural year** and is celebrated in mid-April, coinciding with Bohag Bihu of the Assamese people. The festival symbolizes **renewal, prosperity, and gratitude to nature**.

Baisagu celebrations typically last for **several days** and begin with "**Mwsou thikhang**" (worship of cows), followed by **music, dance (Bagurumba)**, feasting, and community gatherings. Elders bless the younger generation, and prayers are offered for good harvests and well-being.

Information Booster:

Bagurumba dance, often performed during Baisagu, is known as the "**Butterfly Dance**" and reflects harmony with nature. Baisagu is an important marker of **Bodo cultural identity** and agrarian tradition.

Additional Information (Other Options):

- (b) **Deori:** Celebrate festivals like **Bisu**.
- (c) **Dimasa:** Celebrate **Bushu Dima**.
- (d) **Rabha:** Celebrate **Baikho** festival.

Q.64 Which air base traditionally hosts the main Indian Air Force Day parade?

- A. Jodhpur Air Force Station
- B. Bagdogra Air Base
- C. Hindon Air Force Station
- D. Ambala Air Force Station

Answer: C

Sol:

The correct answer is (c) Hindon Air Force Station

Explanation:

- The Hindon Air Force Station, located near Ghaziabad (Delhi NCR), hosts the main parade and air show every year.
- It features flypasts and demonstrations by fighter jets, helicopters, and special forces.

Information Booster:

- Hindon is one of the largest air bases in Asia.
- It houses strategic aircraft like the C-17 Globemaster III and C-130J Super Hercules.

Additional Knowledge: (a) Jodhpur – Strategic air base in Rajasthan (b) Bagdogra – Located in West Bengal (d) Ambala – Base for Rafale fighters

Q.65 Which method best characterises the approach of the Moderates?

- A. Armed revolution
- B. Guerrilla warfare
- C. Petition and prayer
- D. Cultural renaissance

Answer: C

Sol: Correct Answer: (C) Petition and prayer

Explanation:

- The **Moderates**, active during the early phase of the Indian National Movement (1885–1905), believed in achieving reforms through **constitutional methods, dialogue, and peaceful petitions** to the British government.
- Their strategy was to request and persuade rather than confront or revolt.

Information Booster:

- Key Moderate leaders included **Dadabhai Naoroji, Gopal Krishna Gokhale, and Pherozeshah Mehta.**
- Their demands focused on administrative reforms, civil rights, and greater Indian participation in governance.

Q.66 A, B, C, D, E and F are sitting around a circular table, facing the centre. B sits second to the left of F. C is an immediate neighbour of A. B sits to the immediate right of A. D sits second to the left of E. What is the position of E with respect to A?

- A. Immediate right
- B. Third to the left
- C. Second to the right
- D. Second to the left

Answer: D

Sol: Given:

A, B, C, D, E and F are sitting around a circular table, facing the centre.

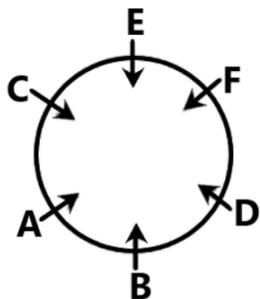
B sits second to the left of F.

C is an immediate neighbour of A.

B sits to the immediate right of A.

D sits second to the left of E.

From the given information seating arrangement will be.



So, **Second to the left** is the position of E with respect to A.

Thus, correct option is (d).

Q.67 Six friends - Edwin, Preeti, Sunita, Jacob, Victoria, and Sagar - are sitting around a circular table facing the centre. Edwin is an immediate neighbour of both Preeti and Sunita. Jacob is sitting third to the left of Sunita. Victoria is sitting second to the right of Jacob. Who is sitting second to the left of Edwin?

- A. Sagar
- B. Victoria
- C. Preeti
- D. Sunita

Answer: B

Sol: Given:

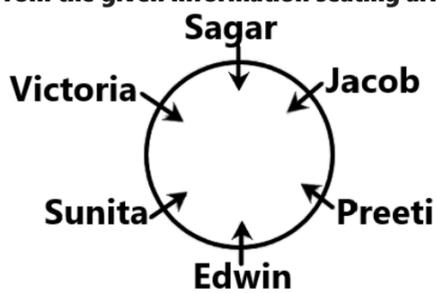
Six friends - Edwin, Preeti, Sunita, Jacob, Victoria, and Sagar - are sitting around a circular table facing the centre.

Edwin is an immediate neighbour of both Preeti and Sunita.

Jacob is sitting third to the left of Sunita.

Victoria is sitting second to the right of Jacob.

From the given information seating arrangement will be.



So, **Victoria** is sitting second to the left of Edwin.

Thus, correct option is (b).

Q.68 Which factor explains why Ooty is cooler than nearby Coimbatore despite similar latitude?

- A. Proximity to the sea
- B. Direction of winds
- C. Altitude difference
- D. Desert location

Answer: C

Sol: The correct answer is (c) Altitude difference

Explanation:

- Temperature decreases as we move from lower to higher altitudes at a rate of approximately $6.5^{\circ}C$ per 1000 meters (Normal Lapse Rate).
- Ooty (Udhagamandalam) is a hill station located in the Nilgiris at an elevation of about 2,240 meters.
- Coimbatore is located on the plains at a much lower elevation (~411 meters).
- Therefore, Ooty is significantly cooler than Coimbatore due to its higher altitude.

Information Booster:

- Latitude-wise, both are very close to the equator (tropical region), which would normally mean hot weather if they were at the same elevation.

Additional Knowledge:

- This same principle explains why Himalayan hill stations are cooler than the North Indian plains.

Q.69 Ustad Zakir Hussain plays_____.

- A. Tabla
- B. Sitar
- C. Guitar
- D. Santoor

Answer: A

Sol: The correct answer is (a) Tabla.

• **Ustad Zakir Hussain** is a world-renowned Indian musician known for his exceptional mastery of the **tabla**, a percussion instrument. He is regarded as one of the greatest tabla players and has played a significant role in popularizing Indian classical music globally.

• Ustad Zakir Hussain is the son of legendary tabla player **Ustad Alla Rakha**, and he has collaborated with numerous musicians from various genres, both in India and internationally. His contributions have significantly advanced the art of tabla playing and Indian music as a whole.

Information Booster:

• **Ustad Zakir Hussain's Contributions:**

- He is known for his technical skill and improvisation in tabla performances.

- Has collaborated with famous musicians like Ravi Shankar, George Harrison, and Mickey Hart.
- **Awards and Recognition:**
- Ustad Zakir Hussain has received numerous prestigious awards, including the **Padma Bhushan** and **Padma Shri** from the Government of India.

Q.70 A computer can perform a variety of tasks at the same time. This characteristic is known as:

- A. Speed
- B. Versatility
- C. Diligence
- D. Accuracy

Answer: B

Sol: The correct answer is **Versatility**, which refers to the ability of a computer to perform different types of tasks.

Important Key Points:

1. **Versatility** means a computer can perform a wide range of tasks, from calculations to word processing to multimedia.
2. It allows computers to be used in various fields such as education, business, engineering, and entertainment.
3. This characteristic makes computers **multi-purpose machines**, adaptable to different applications.

Knowledge Booster:

- **Speed** refers to how fast a computer processes data, not the variety of tasks it can do.
- **Diligence** means the computer does not make mistakes and can work tirelessly, but it does not imply task variety.
- **Accuracy** relates to error-free processing, not the range of functions a computer can perform.
- Versatility is a key factor that distinguishes computers from single-purpose devices.

Q.71 Consider the following pairs

Place of raw material Import (During Harappan/Indus Valley Civilization)

- | | |
|------------------------|-----------------------|
| 1. Copper | South India |
| 2. Tin | Khetri area Rajasthan |
| 3. Shell | Balakot |
| 4. Lajvard or Rajavart | Afghanistan |

Which of the pairs given above is/are correctly matched?

- A. 3 and 4 only
- B. 1 and 2 only
- C. 2 and 3 only
- D. None of the above

Answer: A

Sol: Pair 1 and Pair 2 are not correctly matched. Another strategy to obtain raw materials could be to send prospectors to areas such as the Khetri region of Rajasthan (for copper) and South India (for gold). These search parties established communication with local communities. The occasional discovery of Harappan artefacts such as alabaster micro-beads in these areas are indicative of such contact.

- Pair 3 is correctly matched. The Harappans obtained materials for craft production in various ways. For example, they established settlements like Nageshwar and Balakot in areas where shells or shells were available.

- Pair 4 is correctly matched. Other sites were Shortugai in Afghanistan, which had the best sources of Rajavart (lapis lazuli), a blue stone that was apparently very valuable, also Lothal carnelian (from Bharuch in Gujarat), Selkhadi (from south Rajasthan). and had sources from North Gujarat) and Shaikhhati (from Rajasthan).

- Exports: Agricultural products, cotton textiles, terracotta figurines, pottery, some beads (from Chanhudaro), conch-shells (from Lothal), ivory products, copper etc.

- Note: The people of Harappan civilization had no knowledge of iron.

Q.72 Who led the revolt against the British in Kanpur in 1857?

- A. Begum Hazrat Mahal
- B. Nana Saheb
- C. Tantia Tope
- D. Rani Lakshmbai

Answer: B

Sol: Correct Answer: (B) Nana Saheb

Explanation:

→ Nana Saheb was one of the key leaders of the 1857 revolt in Kanpur.

→ He was the adopted son of the Maratha Peshwa Baji Rao II and was one of the main figures in the rebellion against British rule.

→ Nana Saheb played a crucial role in leading the uprising in Kanpur and successfully resisted British forces for a period of time.

→ His leadership in the Kanpur rebellion is a significant chapter in the history of the 1857 uprising.

Information Booster:

→ Nana Saheb's rebellion began with his dissatisfaction over the British policies, including the Doctrine of Lapse.

→ Tantia Tope, one of Nana Saheb's key associates, continued to fight in other regions after Nana Saheb's defeat.

Additional Information (Other Options):

Option (A) Begum Hazrat Mahal: She led the revolt in Lucknow, not Kanpur.

Option (C) Tantia Tope: Although a prominent figure in the 1857 revolt, he was closely associated with Nana Saheb and played a major role in the Kanpur rebellion, but Nana Saheb was the primary leader.

Option (D) Rani Lakshmbai: Rani Lakshmbai led the revolt in Jhansi, not Kanpur.

Q.73 Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair DOES NOT belong to that group?

(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

- A. TX-YF
- B. KO-QU
- C. NR-TX
- D. GK-MQ

Answer: A

Sol:

1	2	3	4	5	6	7	8	9	10	11	12	13
A	B	C	D	E	F	G	H	I	J	K	L	M
Z	Y	X	W	V	U	T	S	R	Q	P	O	N
26	25	24	23	22	21	20	19	18	17	16	15	14

Logic: Letters are increasing + 6 place.

Now, we check each options.

Option (a): TX-YF

$T + 6 \neq Y, X + 6 \neq F$

Option (b): KO-QU

$K + 6 = Q, O + 6 = U$

Option (c): NR-TX

$N + 6 = T, R + 6 = X$

Option (d): GK-MQ

$G + 6 = M, K + 6 = Q$

Thus, correct option is (a).

Q.74 Name the British chemist who presented his atomic theory in 1808, on conservation of mass and law of definite proportions, which was a turning point in the study of matter.

- A. John Dalton
- B. Lavoisier
- C. Ernest Rutherford
- D. Proust

Answer: A

Sol: Ans. (a) John Dalton

Sol. John Dalton, a British chemist and physicist, presented his **atomic theory in 1808**, which was based on the **law of conservation of mass** and the **law of definite proportions**. His theory proposed that **all matter is composed of tiny, indivisible particles called atoms**, which combine in **fixed ratios to form compounds**. This theory laid the **foundation for modern chemistry** and revolutionized the study of matter.

Information Booster:

- **Dalton's Atomic Theory (1808)** stated that **atoms are indivisible and indestructible**.
- Atoms of the **same element are identical**, but atoms of **different elements vary in properties and mass**.
- **Compounds are formed** when atoms of **different elements combine in simple whole-number ratios**.
- **Chemical reactions involve the rearrangement of atoms**, but atoms themselves **are neither created nor destroyed**.
- Dalton's theory was influenced by **Antoine Lavoisier's Law of Conservation of Mass** and **Joseph Proust's Law of Definite Proportions**.
- Though **Dalton believed atoms were indivisible**, later discoveries, such as **the electron (by J.J. Thomson in 1897)**, **the nucleus (by Rutherford in 1911)**, and **protons/neutrons**, proved that atoms are made of smaller particles.
- Despite modifications, **Dalton's atomic theory remains a cornerstone of modern chemistry**.

Additional Information:

- **Lavoisier (b)** – Known as the "**Father of Modern Chemistry**," he formulated the **Law of Conservation of Mass**, stating that **mass remains constant in a chemical reaction**.
- **Ernest Rutherford (c)** – Discovered the **atomic nucleus in 1911** through his **gold foil experiment** and proposed the **planetary model of the atom**, refuting Dalton's idea of indivisible atoms.
- **Proust (d)** – Introduced the **Law of Definite Proportions**, stating that **a chemical compound always contains elements in a fixed mass ratio**.

Q.75 A few lead spheres of diameter 6 cm are dropped into a cylindrical beaker containing some water such that they are fully submerged. If the diameter of the beaker is 9 cm and the water level has risen by 32 cm, find the number of lead spheres dropped into the beaker.

- A. 18
- B. 15
- C. 16
- D. 14

Answer: A

Sol: Given:

The radius of the sphere is 3 cm

Radius & height of cylinder are 4.5 cm & 32cm

Formula used:

The volume of sphere = $\frac{4}{3}\pi r^3$

The volume of cylinder = $\pi r^2 h$

Solution:

The volume of sphere inserted = volume of water risen in beaker

Radius of sphere = $\frac{6}{2} = 3$ cm

Radius of cylinder = $\frac{9}{2} = 4.5$

So,

$$\left(\frac{4}{3}\pi\right) \times (3)^3 \times \text{Number of sphere} = \pi (4.5) \times (4.5) \times 32$$

$$\Rightarrow \text{Number of sphere} = 18$$

Hence, option (a) is the correct answer.

Q.76 If α and β are the zeroes of the polynomial $x^2 - 5x + m$ such that $\alpha - \beta = 1$, then what will be the value of m .

- A. 3
- B. 2
- C. 6
- D. 10

Answer: C

Sol: Given:

The polynomial is $x^2 - 5x + m$, and the roots α and β satisfy $\alpha - \beta = 1$

Concept Used:

$$\alpha + \beta = -\frac{b}{a} \quad \text{and} \quad \alpha\beta = \frac{c}{a}$$

Solution:

$$\alpha + \beta = -\frac{-5}{1} = 5 \quad \text{and} \quad \alpha\beta = \frac{m}{1} = m$$

$$\alpha + \beta = 5 \quad \text{and} \quad \alpha\beta = m$$

$$\alpha - \beta = 1$$

$$(\alpha - \beta)^2 = (\alpha + \beta)^2 - 4\alpha\beta$$

$$1^2 = 5^2 - 4m$$

$$1 = 25 - 4m$$

$$4m = 25 - 1$$

$$4m = 24$$

$$m = 6$$

Q.77 Which one of the following is the main cause of the “Mediterranean climate” in southern California and central Chile?

- A. Warm ocean currents
- B. Cold ocean currents
- C. Subtropical high pressure
- D. Westerly winds

Answer: B

Sol:

Correct Answer: (B) Cold ocean currents

Explanation:

→ Southern California and central Chile experience a classic Mediterranean climate with hot, dry summers and cool, wet winters.

→ This seasonal pattern is mainly created by cold ocean currents—the California Current along the western USA and the Humboldt (Peru) Current along Chile.

→ These currents cool the air above them, suppress evaporation, and reduce summer rainfall, producing dry, stable, subsiding air masses near the coast.

→ In winter, the westerlies shift equatorward, allowing depressions to bring moderate rainfall—completing the Mediterranean climate cycle.

→ Without the influence of these cold currents, the characteristic dryness and mildness of the region would not occur.

Information Booster:

→ California Current = cold current of the North Pacific

→ Humboldt Current = strong cold current along western South America

→ Cold currents stabilize the air and inhibit convection

→ Mediterranean climates are found on west coasts between 30°–40° latitudes

→ Other regions with this climate: Mediterranean Basin, SW Australia, South Africa’s Cape region

Additional Information (Other Options):

Option (A) Warm ocean currents do not create dryness; they increase evaporation and promote instability, which is the opposite of Mediterranean conditions.

Option (C) Subtropical high pressure does contribute to summer dryness, but by itself cannot explain the specific Mediterranean pattern; the cold currents strengthen the effect.

Option (D) Westerly winds bring winter rain but are not the main cause of the climate’s dryness and temperature regime—those arise primarily from cold currents.

Q.78 In a certain code language, ‘what are those’ is written as ‘np tr sq’ and ‘take those gifts’ is coded as ‘hk my tr’. How is ‘those’ coded in that language?

- A. tr
- B. my
- C. hk
- D. np

Answer: A

Sol: Given: In a certain code language, ‘what are those’ is written as ‘np tr sq’ and ‘take those gifts’ is coded as ‘hk my tr’.

what are those = np tr sq

take those gifts = hk my tr

So, the code of **those** is **tr**.

Thus, correct option is (a).

Q.79 Jal Jeevan Mission (JJM) was launched in which year?

- A. 2014
- B. 2016
- C. 2019
- D. 2021

Answer: C

Sol: The correct answer is (c) 2019

Explanation:

· JJM was launched in 2019 with the aim of providing **Functional Household Tap Connections (FHTC)** to every rural household.

· It seeks to ensure **55 litres per capita per day (lpcd)** of safe drinking water by 2024.

Information Booster:

- **Background:** National Rural Drinking Water Programme was restructured and subsumed into JJM.
- **Type:** Centrally Sponsored Scheme.
- **Nodal Ministry:** Department of Drinking Water & Sanitation, Ministry of Jal Shakti.

Q.80 Which of the following statements about **Bindusara**, the second Mauryan emperor, is incorrect?

1. Bindusara was the son and successor of Chandragupta Maurya.
2. Bindusara was a powerful conqueror who greatly expanded the Mauryan Empire.
3. Bindusara was an efficient ruler who upheld the administrative structure created by his father.

- A. 1 and 2
B. 2 and 3
C. Only 2
D. 1, 2 and 3

Answer: C

Sol: The correct answer is (C) Only 2

- **Statement 1** is correct: **Bindusara** was indeed the son and successor of **Chandragupta Maurya**, the founder of the Maurya Empire.
- **Statement 2** is incorrect: While Bindusara **expanded the Mauryan Empire**, his conquests were not as extensive as those of his father. His major military campaign was against the **Nanda Dynasty** in the Deccan, but he did not significantly expand the empire compared to his father or son, **Ashoka**.
- **Statement 3** is correct: Bindusara **maintained the administrative system** set up by **Chandragupta Maurya** and had a well-structured administration, including a system of provinces and governors.

Information Booster:

- Bindusara ruled from **c. 297 BCE to 273 BCE** and was instrumental in solidifying the foundations of the **Maurya Empire**.
- His reign was marked by **internal peace** and relative stability, and he continued the **centralized administration** set by Chandragupta.
- Bindusara's empire extended from the **north of India** to the **Deccan Plateau**, although it did not reach the southernmost parts of India, which was achieved later by Ashoka.

Q.81 Consider the following statements regarding the Council of Ministers in India:

1. The Council of Ministers is collectively responsible to the Lok Sabha.
2. The Prime Minister appoints the council of ministers.
3. The Council of Ministers includes Cabinet Ministers, Ministers of State, and Deputy Ministers.

Which of the above statements is/are correct?

- A. 1 and 2 only
B. 1 and 3 only
C. 1, 2 and 3
D. 3 only

Answer: B

Sol: Explanation:

- According to Article 75(3) of the Indian Constitution, the Council of Ministers is collectively responsible to the Lok Sabha, the lower house of Parliament. This means that if the Lok Sabha passes a vote of no confidence against the Council, all members including the Prime Minister must resign.
- As per Article 75(1) of the Indian Constitution, the President appoints the Prime Minister and, on the advice of the Prime Minister, appoints the other members of the Council of Ministers.
- The Council of Ministers is a broad body that includes Cabinet Ministers, who are the senior-most members and head various ministries; Ministers of State, who can be either independent charge or assist Cabinet Ministers; and Deputy Ministers, who assist the Ministers of State.

Q.82 Wasim travels 455 km at 91 km/hr, the next 390 km at 78 km/hr and the next 476 km at 68 km/hr. What is his average speed (in km/hr) for the whole journey? (Round off your answer to two decimal places)

- A. 73.67
- B. 77.71
- C. 78.96
- D. 78.27

Answer: B

Sol: Given

$$\text{Distance}_1 = 455, \text{Speed}_1 = 91$$

$$\text{Distance}_2 = 390, \text{Speed}_2 = 78$$

$$\text{Distance}_3 = 476, \text{Speed}_3 = 68$$

Formula Used

$$\text{Average Speed} = \frac{\text{Total Distance}}{\text{Total Time}}$$

Solution

$$\text{Time}_1 = \frac{455}{91} = 5$$

$$\text{Time}_2 = \frac{390}{78} = 5$$

$$\text{Time}_3 = \frac{476}{68} = 7$$

$$\text{Total Distance} = 455 + 390 + 476 = 1321$$

$$\text{Total Time} = 5 + 5 + 7 = 17$$

$$\text{Average Speed} = \frac{1321}{17} = 77.7058 \approx 77.71$$

Q.83 If $\sqrt{3} \tan A = 3 \sin A$, find the value of $(2\sqrt{3} \operatorname{cosec} A \times \tan A)$

- A. 6
- B. $\sqrt{3}$
- C. $2\sqrt{3}$
- D. 2

Answer: A

Sol: Given:

$$\sqrt{3} \tan A = 3 \sin A$$

To find: $(2\sqrt{3} \operatorname{cosec} A \times \tan A)$

Solution:

$$\sqrt{3} \tan A = 3 \sin A$$

$$\sin A = \frac{\sqrt{3} \tan A}{3}$$

$$\implies \operatorname{cosec} A = \frac{3}{\sqrt{3} \tan A}$$

Now, putting this into the expression;

$$2\sqrt{3} \operatorname{cosec} A \times \tan A$$

$$= 2\sqrt{3} \times \frac{3}{\sqrt{3} \tan A} \times \tan A$$

$$= 6$$

Q.84 The average weight of Salil, Mukund and Sachin is 45 kg. If the average weight of Salil and Mukund is 44 kg and that of Mukund and Sachin is 48 kg, then the weight of Mukund (in kg) is:

- A. 49
- B. 59
- C. 69
- D. 64

Answer: A

Sol: Given

$$\text{Average of (Salil + Mukund + Sachin)} = 45 \text{ kg}$$

$$\text{Average of (Salil + Mukund)} = 44 \text{ kg}$$

$$\text{Average of (Mukund + Sachin)} = 48 \text{ kg}$$

Formula Used

$$\text{Sum} = \text{Average} \times \text{Number of terms}$$

Solution

$$\text{Total weight of Salil, Mukund, and Sachin} = 45 \times 3 = 135 \text{ kg}$$

$$\text{Total weight of Salil and Mukund} = 44 \times 2 = 88 \text{ kg}$$

$$\text{Total weight of Mukund and Sachin} = 48 \times 2 = 96 \text{ kg}$$

Adding the two pairs:

$$(\text{Salil} + \text{Mukund}) + (\text{Mukund} + \text{Sachin}) = 88 + 96$$

$$\text{Salil} + 2(\text{Mukund}) + \text{Sachin} = 184 \text{ kg}$$

To find Mukund's weight, subtract the total weight of all three from the sum of the pairs:

$$\text{Mukund} = (\text{Salil} + 2(\text{Mukund}) + \text{Sachin}) - (\text{Salil} + \text{Mukund} + \text{Sachin})$$

$$\text{Mukund} = 184 - 135$$

$$\text{Mukund} = 49 \text{ kg}$$

Final Answer

So the correct answer is (a)

Q.85 Which Article of the Indian Constitution forms the constitutional basis for Judicial Review?

- A. Article 30
- B. Article 19
- C. Article 370
- D. Article 13

Answer: D

Sol:

Correct Answer: (d) Article 13

Explanation:

- Article 13 declares that any law inconsistent with Fundamental Rights is **null and void**.
- This gives courts power to **review and strike down unconstitutional laws**, forming the **core of judicial review**.
- Judicial review protects citizens from arbitrary laws and ensures supremacy of the Constitution.
- Key cases: ✓ **Kesavananda Bharati Case (1973)** – Judicial review is part of the **Basic Structure**.

Information Booster:

- Articles 32 & 226 also support judicial review.
- India adopted judicial review from **US Constitution system**.
- Ensures separation of powers & constitutional governance.

Additional Knowledge:

Art 30 – Minority institutions. **Art 19** – Six freedoms (speech, movement, etc.). **Art 370** – Special status of J&K (removed in 2019).

Q.86 The average of first 157 even numbers is

- A. 158.5
- B. 157.5
- C. 159
- D. 158

Answer: D

Sol: Given:

We need to find the average of the first 157 even numbers.

Formula Used:

The average of the first n even natural numbers is given by the formula: $n + 1$.

Solution:

Here, the number of terms (n) is 157.

Using the formula, the average is:

Average = $157 + 1 = 158$.

Final Answer

So the correct answer is (d)

Q.87 Tropic of Cancer, Equator and Tropic of Capricorn do not pass through which of the following continent/s ?

- A. North America and Antarctica
- B. Australia and Antarctica
- C. Europe and Antarctica
- D. Only Antarctica

Answer: C

Sol: The Tropic of Cancer passes through North America but not Antarctica. The Equator does not pass through Europe or Antarctica. The Tropic of Capricorn passes through Australia but not Antarctica.

Q.88 An amount of ₹432 is divided among three persons in the ratio of 5 : 14 : 17. The difference between the largest and the smallest shares (in ₹) in the distribution is:

- A. 144
- B. 62
- C. 178
- D. 132

Answer: A

Sol: Given:

Total Amount = ₹432

Ratio of shares = 5 : 14 : 17

Formula Used:

Value of one ratio part = $\frac{\text{Total Amount}}{\text{Sum of ratio parts}}$

Solution:

Calculate the sum of the ratio parts:

$$\text{Sum} = 5 + 14 + 17 = 36 \text{ parts}$$

Find the value of 1 ratio part:

$$1 \text{ part} = \frac{432}{36} = 12$$

Identify the largest and smallest ratio parts:

Largest part = 17

Smallest part = 5

Calculate the difference in ratio parts:

$$\text{Difference in parts} = 17 - 5 = 12 \text{ parts}$$

Calculate the exact amount difference:

$$\text{Difference amount} = 12 \times 12 = 144$$

Final Answer

So the correct answer is (a)

Q.89 In the word "EDUCATION", if we assign even numbers to vowels (2, 4, 6, 8, ...), what is the sum of all vowel values?

- A. 20
- B. 24
- C. 30
- D. 28

Answer: C

Sol: Given: EDUCATION

Vowels: E, U, A, I, O

Total vowels = 5

Assign even numbers in order:

2, 4, 6, 8, 10

$$\text{Sum} = 2 + 4 + 6 + 8 + 10$$

$$= 30$$

So, **30** is the sum of all vowel values.

Thus, correct option is (c).

Q.90 Refer to the given series and answer the question that follows. (All numbers are single digit numbers only.) Counting to be done from left to right.

(Left) 5 7 4 5 2 5 7 9 8 7 4 2 3 4 3 6 9 3 6 2 3 7 1 8 4 1 5 (Right)

How many such even digits are there, each of which is immediately preceded by an even digit and also immediately followed by an odd digit?

- A. 3
- B. 4
- C. 2
- D. 5

Answer: A

Sol: Given: (Left) 5 7 4 5 2 5 7 9 8 7 4 2 3 4 3 6 9 3 6 2 3 7 1 8 4 1 5 (Right)

Logic: Even digit | Even digits | Odd digit

(Left) 5 7 4 5 2 5 7 9 8 7 **4 2 3** 4 3 6 9 3 **6 2 3** 7 1 **8 4 1** 5 (Right)

So, **3** such even digits are there, each of which is immediately preceded by an even digit and also immediately followed by an odd digit.

Thus, correct option is (a).

Q.91 Evaluate: $(-9) - (-60) \div (-10) + (-4) \times 6$

- A. -39
- B. -38
- C. -42
- D. -41

Answer: A

Sol: Given:

Expression: $(-9) - (-60) \div (-10) + (-4) \times 6$

Solution:

$$\begin{aligned} & (-9) - (-60) \div (-10) + (-4) \times 6 \\ & = (-9) - 6 + (-4) \times 6 \\ & = (-9) - 6 + (-24) \\ & = (-15) + (-24) \\ & = -39 \end{aligned}$$

Final Answer

So the correct answer is (a)

Q.92 Find the circumference (in m) of the largest circle that can be drawn completely inside a rectangle whose dimensions are given as 249 m and 168 m. (Take $\pi = 22/7$.)

- A. 521
- B. 528
- C. 530
- D. 536

Answer: B

Sol: Given:

Rectangle dimensions = 249 m and 168 m

Find circumference of largest circle that fits inside the rectangle

Concept Used:

Largest circle that fits completely inside a rectangle has diameter equal to the rectangle's smaller side.

Formula Used:

Circumference (C) of circle = $2\pi r$

where $r = (\text{smaller side})/2$

Solution:

Smaller side = 168 m

→ diameter = 168 m

→ radius (r) = 84 m

$$\text{Circumference} = 2 \times \frac{22}{7} \times 84$$

$$= 2 \times 22 \times 12$$

$$= 44 \times 12$$

$$= 528 \text{ m}$$

Q.93 LPBF is related to EIUY in a certain way based on the English alphabetical order. In the same way, JNZD is related to CGSW. To which of the given options is OSEI related, following the same logic?

- A. HBGF
- B. HLXB
- C. HLBX
- D. HBXL

Answer: B

Sol: Given: LPBF is related to EIUY and JNZD is related to CGSW with same logic.

1	2	3	4	5	6	7	8	9	10	11	12	13
A	B	C	D	E	F	G	H	I	J	K	L	M
Z	Y	X	W	V	U	T	S	R	Q	P	O	N
26	25	24	23	22	21	20	19	18	17	16	15	14

Logic: Letters are decreasing - 7 place.

For, LPBF - EIUY

L - 7 = E, P - 7 = I, B - 7 = U, F - 7 = Y

For, JNZD - CGSW

J - 7 = C, N - 7 = G, Z - 7 = S, D - 7 = W

Similarly,

OSEI - ?

O - 7 = H, S - 7 = L, E - 7 = X, I - 7 = B

So, OSEI is related to **HLXB**.

Thus, correct option is (b).

Q.94 If mean of the following distribution is 26, then what is the value of k?

Class 0-10 10-20 20-30 30-40 40-50

Frequency 8 10 k 6 12

- A. 8
- B. 1
- C. 4
- D. 10

Answer: C

Sol: Given:

Class intervals: 0-10, 10-20, 20-30, 30-40, 40-50

Frequencies: 8, 10, k, 6, 12

Mean (\bar{x}): 26

Formula Used:

The formula for the mean of grouped data is:

$$\bar{x} = \frac{\sum f_i x_i}{\sum f_i}$$

f_i is the frequency of the i-th class.

x_i is the midpoint of the i-th class.

Solution:

x

=

$$\frac{\text{Lower Limit} + \text{Upper Limit}}{2}$$

$$0 - 10 : x_1 = \frac{0 + 10}{2} = 5$$

...

$$10 - 20 : x_2 = \frac{10 + 20}{2} = 15$$

$$20 - 30 : x_3 = \frac{20 + 30}{2} = 25$$

$$30 - 40 : x_4 = \frac{30 + 40}{2} = 35$$

$$40 - 50 : x_5 = \frac{40 + 50}{2} = 45$$

$$\bar{x} = \frac{\sum f_i x_i}{\sum f_i}$$

$$26 = \frac{(8 \times 5) + (10 \times 15) + (k \times 25) + (6 \times 35) + (12 \times 45)}{8 + 10 + k + 6 + 12}$$

$$26(36 + k) = 940 + 25k$$

$$936 + 26k = 940 + 25k$$

$$936 - 940 = 25k - 26k$$

$$-4 = -k$$

$$k = 4$$

Option (c) is right answer.

Q.95 In a row of 103 students facing north, Z is 15th from the right end. If G is 36th to the left of Z, what is G's position from the left end of the line?

- A. 53rd
- B. 52nd
- C. 54th
- D. 55th

Answer: A

Sol: Given:

In a row of 103 students facing north, Z is 15th from the right end.

If G is 36th to the left of Z.

Solution:

Total students = 103

Z is 15th from the right.

Position from the left = $103 - 15 + 1 = 89$

So, Z is 89th from the left.

G is 36 places to the left of Z.

$89 - 36 = 53$

So, G is **53rd** from the left end of the line.

Thus, correct option is (a).

Q.96 The Gurjara-Pratihara dynasty was founded by _____ in the region of Malwa in the eighth century.

- A. Vatsaraja
- B. Nagabhata I
- C. Mihira Bhoja
- D. Dhruva

Answer: B

Sol: The correct answer is (b) Nagabhata I.

Explanation:

- **Nagabhata I** is credited with founding the **Gurjara-Pratihara dynasty** in the **eighth century** in the **region of Malwa**.
- He is known for his **military prowess** and his efforts to defend northern India against the **Arabs**.
- Nagabhata I established the dynasty, which played a crucial role in the political landscape of **India** during the medieval period.

Information Booster:

- The **Gurjara-Pratihara dynasty** was one of the three major powers, along with the **Rashtrakutas** and **Pallavas**, that dominated the northern **Indian subcontinent** during the **8th and 9th centuries**.
 - **Mihira Bhoja**, another prominent king of the Gurjara-Pratihara dynasty, is known for his **military expansions** and patronage of arts.
 - **Vatsaraja** was an important ruler of this dynasty, but it was **Nagabhata I** who established it.
- Additional Information:
- The **Gurjara-Pratihara dynasty** is known for its contributions to **art, architecture, and literature**, particularly in regions like **Malwa, Rajasthan, and Gujarat**.

Q.97 What is the implication of Article 239AA in the context of the National Capital Territory of Delhi?

- A. Grants full statehood rights to Delhi
- B. Grants full control over police to Delhi government
- C. Merged Delhi Assembly with Indian Parliament
- D. Provides Legislative Assembly for Delhi

Answer: D

Sol: The correct answer is (d) Provides Legislative Assembly for Delhi

Explanation:

- Article 239AA was added to the Constitution by the 69th Amendment Act, 1991.
- It granted a special status to Delhi by providing for an elected Legislative Assembly.
- The Assembly has powers over subjects in the State List and Concurrent List, except public order, police, and land.
- A Council of Ministers headed by the Chief Minister aids and advises the Lieutenant Governor.

Information Booster:

- Delhi was formally designated as the National Capital Territory (NCT) through this provision.
- Despite the legislative powers, the central government retains significant control over Delhi.

Additional Knowledge:

Grants full statehood rights to Delhi (Option a)

- Incorrect — Delhi remains a Union Territory with partial statehood.

Grants full control over police to Delhi government (Option b)

- Incorrect — Police remains under the Union Government.

Merged Delhi Assembly with Indian Parliament (Option c)

- Incorrect — Article 239AA restored a separate legislature for Delhi.

Q.98 The HCF of two numbers is 9 and the product of the two numbers is 8100. How many pairs of numbers satisfy the given conditions?

- A. 5
- B. 3
- C. 2
- D. 4

Answer: C

Sol: Given :

HCF = 9

Product of two numbers = 8100

Formula Used :

If HCF = h, then numbers are ha and hb

Product = $h^2 \times ab$

Solution :

Let the two numbers be 9a and 9b, where a and b are coprime.

$$9^2 \times ab = 8100$$

$$81ab = 8100$$

$$ab = 100$$

Now find the number of coprime factor pairs of 100.

Factor pairs of 100:

a	b	gcd(a, b)
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1 100 1

2 50 2

4 25 1

5 20 5

10 10 10

Only 2 pairs are coprime:
(1,100), (4,25)

Corresponding number pairs:

(9,900), (36,225)

Answer :

Number of pairs = 2

Q.99 A shopkeeper lists the price of a fan at 50% above its cost price and offers a 30% discount on its list price. If he earns a profit of ₹86, then what is the list price (in ₹) of the fan?

- A. 2,444
- B. 2,580
- C. 2,825
- D. 2,386

Answer: B

Sol: Given:

Markup Percentage = 50% above CP

Discount Percentage = 30% on List Price

Profit earned = ₹86

Formula Used:

$$\text{List Price} = \text{CP} \times \left(1 + \frac{\text{Markup \%}}{100}\right)$$

$$\text{Selling Price (SP)} = \text{List Price} \times \left(1 - \frac{\text{Discount \%}}{100}\right)$$

$$\text{Profit} = \text{SP} - \text{CP}$$

Solution:

Let the Cost Price (CP) of the fan be 100x.

List Price = 100x + 50% of 100x = 150x.

The shopkeeper gives a 30% discount on the List Price.

Selling Price (SP) = 150x - 30% of 150x

SP = 150x - 45x = 105x.

Calculate the profit in terms of x:

Profit = SP - CP

Profit = 105x - 100x = 5x.

We are given that the profit is ₹86.

5x = 86

x = 17.2

Now, find the List Price:

List Price = 150x

List Price = 150 × 17.2 = 2580

Final Answer

So the correct answer is (b)

Q.100 In an election, there were only two candidates. The winning candidate got 48% of the total votes. His opponent got 6800 votes which was 34% of the total votes. Some of the votes were invalid. The winning margin of the candidate who won the election and the number of invalid votes

respectively are:

- A. 3200 votes, 3600 votes
- B. 2800 votes, 3600 votes
- C. 3600 votes, 2800 votes
- D. 3000 votes, 3600 votes

Answer: B

Sol: Given:

Winning candidate got 48% of total votes

Opponent got 6800 votes = 34% of total votes

Remaining votes are invalid

Solution:

$$\text{Total Votes} = \frac{6800}{34} \times 100 = 20000$$

$$\text{Votes of Winner} = 48\% \text{ of } 20000 = 9600$$

$$\text{Winning Margin} = 9600 - 6800 = 2800$$

$$\text{Invalid Votes} = 20000 - (9600 + 6800) = 20000 - 16400 = 3600$$

$$\text{Winning Margin} = 2800, \text{ Invalid Votes} = 3600$$

