SSC CHSL 2025 Tier-1 (Held On: 17 Nov, 2025 Shift 3) (Previous Year Paper)

SSC Combined Higher Secondary Level (CHSL) • 2025 • 100 questions • 60 minutes • Answer key and solutions

Take this paper as a timed mock test

Practise under exam conditions, then review your answers after you submit.

yourmocktest.com/pyq/ssc-chsl/ssc-chsl-2025-tier-1-held-on-17-nov-2025-shift-3-previous-year…

Scan the QR code or click the link to open it.

1 question is in Hindi and not printed here. Each one links to the online version, where you can read it.

ENGLISH LANGUAGE

Q1. Identify the part of the sentence that contains a grammatical error.

A. The professors recommendation was B. that the student, C. whom she had worked with for years, D. be granted a full scholarship.

(a) The professors recommendation was
(b) that the student
(c) whom she had worked with for years
(d) be granted a full scholarship.

Q2. Identify the part of the sentence that contains a grammatical error.

A. We need to B. discuss about the C. new marketing strategy D. in the next meeting.

(a) We need to
(b) discuss about the
(c) new marketing strategy
(d) in the next meeting

Q3. Fill in the blank with the most appropriate verb:

The witness _____ under cross-examination, revealing inconsistencies in the testimony.

(a) collapsed
(b) admitted
(c) faltered
(d) insisted

Q4. Select the most appropriate synonym of the word: MINDFULNESS

(a) Distraction
(b) Awareness
(c) Chaos
(d) Negligence

Q5. Select the most appropriate synonym of the word: Ebullient

(a) Depressed
(b) Joyful
(c) Melancholy
(d) Gloomy

Q6. Choose the correctly spelt word:

(a) Kindergarten
(b) Kindergerten
(c) Kindergeren

(d) Kindergarden

Directions

Read the following passage and answer the questions based on it:

Research on the psychological consequences of social media on teenagers is complex and becoming more urgent, raising important issues regarding corporate responsibility and cognitive development. The ubiquitous presence of platforms designed to maximise interaction has led many to wonder whether they are reengineering the brains of adolescents, essentially changing the way they think and feel about the world. The relentless, dopamine-reinforced cycles of likes, shares, and notifications habituate the teen brain for instant rewards, possibly lowering the ability for delayed reward and focused, in-depth attention. Also, the edited and sometimes idealised character of online material creates a culture of constant social comparison, resulting in increased rates of anxiety, depression, and body dysmorphic concerns. The pressure to express an idealised digital self and the anxiety about missing out (FOMO) result in a constant state of social and emotional monitoring that can be harmful to a healthy sense of worth and identity development.

This irrefutable psychological burden puts the question of accountability in the spotlight. Critics are saying that social media companies, by deliberately creating addictive algorithms and profiting from the very engagement that is hurting people, have both moral and ethical responsibility to safeguard their youngest users. They are saying that the platforms' inaction regarding strong age verification, content blocking, and responsible limits on usage amounts to a dereliction of responsibility, much like other industries are responsible for the effects of their products. On the other hand, platforms and their allies tend to cite the importance of parental control and personal agency, claiming that it is hard to create a direct causal relationship between platform usage and particular mental health effects. Yet, the scale of the problem and the powerful anecdotal and nascent empirical evidence encourage an appraisal of the issue at a more systematic level. In the end, it's not a matter of blaming one thing, but rather finding a collective paradigm of responsibility involving increased government oversight, an inherent change in corporate values towards users' welfare, and enhanced digital literacy and critical thinking education among young people themselves.

Q7. What is the primary concern raised by the passage regarding the psychological effects of social media on teenagers?

(a) Social media fosters stronger relationships in teens
(b) Social media contributes to improved cognitive development
(c) Social media alters the way teens think and feel about the world
(d) Social media platforms provide healthier forms of interaction

Q8. According to the passage, what psychological effect does social media's "dopamine-reinforced cycles" have on teenagers?

(a) It promotes delayed gratification
(b) It enhances teens' ability to focus on long-term goals
(c) It weakens the ability for delayed reward and in-depth attention
(d) It encourages the development of deep, meaningful connections

Q9. What argument do critics make regarding social media companies' responsibility?

(a) Social media companies are not liable for their algorithms' impact on users
(b) Social media companies are solely responsible for users' content
(c) Social media companies should be exempt from responsibility for mental health issues
(d) Social media companies are morally and ethically responsible for the mental health effects on teens

Q10. How does the passage propose addressing the issues related to social media's impact on teenagers?

(a) By limiting social media usage entirely
(b) By increasing digital literacy and critical thinking education among young people
(c) By reducing parental control over social media usage
(d) By focusing only on corporate accountability

Q11. In the passage, the word "ubiquitous" most nearly means:

(a) Rare and isolated
(b) Present everywhere
(c) Dependent on specific locations
(d) Outdated and irrelevant

Q12. Which of the following sentences uses the word "swell" with a different meaning from the others?

(a) My ankle began to swell after I twisted it.
(b) His pride began to swell as he accepted the award
(c) The baker watched the dough swell as it proofed.
(d) The party was an absolute swell affair.

Q13. Choose the correct meaning of the idiom: An ivory tower

(a) A state of privileged seclusion
(b) An expensive building
(c) A place of hard work
(d) A towering structure

Q14. Choose the correct meaning of the idiom: The Midas touch

(a) Financial hardship
(b) The ability to turn anything into gold
(c) A bad reputation
(d) A lucky streak

Q15. Choose the correct one-word substitute for:

A person who repairs shoes.

(a) Tailor
(b) Plumber
(c) Cobbler
(d) Mechanic

Q16. Select the most appropriate antonym of the word: Venerate

(a) Honor
(b) Despise
(c) Respect
(d) Admire

Q17. Choose the correct one-word substitute for:

A longing for past times.

(a) Reminiscence
(b) Nostalgia
(c) Melancholy
(d) Sentimentality

Q18. Change the following sentence into the Active form.

The students are said to be struggling with the new curriculum.

(a) The new curriculum is said to be struggling with the students.
(b) They say that the students are struggling with the new curriculum.
(c) The students are struggling with the new curriculum, it is said.
(d) Someone said that the students were struggling with the new curriculum.

Q19. Select the option that expresses the given sentence in indirect voice.

He says, "I am building a model ship in my spare time."

(a) He says that he was building a model ship in his spare time.
(b) He says that he is building a model ship in his spare time.
(c) He said that he is building a model ship in his spare time.
(d) He says that a model ship is being built by him in his spare time.

YourMockTest.com — Free Study Material

Q20. Choose the most suitable option to replace the highlighted part of the sentence:

Each and every one of the boys took their seat in the bus.

(a) Each and every one of the boys took there seat
(b) Each and every one of the boys took his seat
(c) Each of the boy took his seat
(d) Each of the boys took their seat

Q21. Choose the most suitable option to replace the highlighted part of the sentence :

As Farooque was migrating to the US, he wanted to dispose off his furniture.

(a) to dispose of
(b) to dispose in
(c) disposal of
(d) to dispose

Q22. Choose the correct passive voice transformation of the sentence:

Someone is cleaning the windows.

(a) The windows were being cleaned.
(b) The windows have been cleaned.
(c) The windows are being cleaned.
(d) The windows are cleaned.

Q23. Select the option that expresses the given sentence in direct voice.

The old woman told the children that they should always be kind to animals and that she had been doing so her entire life.

(a) The old woman said to the children, "You must always be kind to animals, and I have done so my entire life."
(b) The old woman said to the children, "You should always be kind to animals, and I have been doing so my entire life."
(c) The old woman said to the children, "You should always be kind to animals, and I had been doing so my entire life."
(d) The old woman said to the children, "You must always be kind to animals, and I have been doing so my entire life."

Q24. Rearrange the following sentence parts to form a meaningful and grammatically correct paragraph:

P. She poured the hot liquid into her favourite mug.
Q. A downpour had started raining hard, beating against the windowpanes in steady rhythm.
R. The kitchen was filled with the scent of cinnamon and cloves, a comforting and warm smell.
S. It was a fantastic night to have a mug of hot cider.

(a) RQPS
(b) QSRP
(c) SPQR
(d) RPQS

Q25. Rearrange the following sentence parts to form a meaningful and grammatically correct paragraph:

P. The air was heavy with the reek of seaweed and salt.
Q. He walked down the deserted beach, the sand cool against his bare feet.
R. The sun went below the horizon, coloring the sky with orange, pink, and purple colors.
S. The waves gently lapped at the shore, a constant, soothing sound.

(a) QPSR
(b) RQSP
(c) PQRS
(d) SQRP

GENERAL INTELLIGENCE

YourMockTest.com — Free Study Material

Q26. You're observing a friend who is talking rapidly, fidgeting with their hands, and frequently glancing around the room. What nonverbal cues are they primarily exhibiting?

(a) Calmness and relaxation.
(b) Excitement or anxiety.
(c) Disinterest in the conversation.
(d) Deep concentration.

Q27. Find the next term in the series: 3, 5, 9, 17, 33, ?

(a) 60
(b) 62
(c) 65
(d) 67

Q28. If "MOTHER" is coded as "OMHTRE", how is "FATHER" written in that code?

(a) AFHTER
(b) AFHTRE
(c) FAHTRE
(d) FHTARE

Q29. A recipe requires 1.5 cups of flour for 12 cookies. How many cups of flour are needed for 30 cookies?

(a) 3.0 cups
(b) 3.25 cups
(c) 3.5 cups
(d) 3.75 cups

Q30. Directions: Pick the correct options from the given alternatives

786 : 897 : : 652 : ?

(a) 763
(b) 862
(c) 963
(d) 776

Q31. Which of the following are NOT twin prime numbers?

(a) (11, 13)
(b) (41, 43)
(c) (59, 61)
(d) (19, 23)

Q32. Find the number of terms in the following series.

15, 25, 35, 45, _____, 125

(a) 10
(b) 11
(c) 12
(d) 13

Q33. Find out the next term in the following series.

1221, 13331, 144441, 1555551, ?

(a) 166661
(b) 1666661
(c) 16666661
(d) 16661

YourMockTest.com — Free Study Material

Q34. Which of the following should be the next term in the given series?

B59, D61, F67, H71, ?

(a) J69
(b) J73
(c) K75
(d) L91

Q35. Select the option which fills both the blanks in a correct manner such that the given pair are related to each other:

J : M : :T : ?

R : ? : : B : G

(a) V
(b) W
(c) U
(d) S

Q36. Udit is elder to Pooja. Prerna is younger to both Anuj and Vidit. Swati is younger to Prerna and elder to Udit. Anshu is younger to Swati, but not the youngest. How many persons are younger to Vidit?

(a) 5
(b) Either 4 or 5
(c) Either 5 or 6
(d) 6

Q37. Read the given statement and the following assumptions and decide which of the assumptions is implicit in the statement.

Statement:

The government decided to pay a compensation of Rs. 5 lakhs to the family members of those who were killed in the boat accident in the Godavari at Pasuvullanka.

Assumptions:

I. Government treasury has enough funds to fulfil the compensation expenses.

II. The government can try to bring down the incidents of boat accidents in the future in that area.

(a) Only assumption I is implicit.
(b) Only assumption II is implicit.
(c) Either assumption I or II is implicit.
(d) Neither assumption I nor II is implicit.

Q38. The given question consists of a statement, followed by two courses of action numbered I and II. You have to decide which of the course(s) of action logically follows.

Statement: Dengue fever broke out in some of the district of a state. Hospitals beds are full of dengue patients and several casualties were also reported due to it.

Course of actions:

I. Health Minister of the state should be removed.

II. Through different modes, general people should be made aware of preventive measures to be adopted in such situation.

(a) Only I follows.
(b) Only II follows.
(c) Both I and II follow.
(d) Neither I nor II follows.

Q39. Find out the next term of the Letter cluster.

BFG, DHI, FJK, ?

(a) HKL
(b) HML
(c) HLM

YourMockTest.com — Free Study Material

(d) LKM

Q40. Which of the following letter from given four alternatives will come next to the series?

C, E, I, O, ?

(a) V
(b) W
(c) X
(d) T

Q41. Complete the given series of letter clusters.

BDFH, FHJL, JLNP, ?

(a) NRQT
(b) KNPR
(c) NPTT
(d) NPRT

Q42. If % means "add both numbers and multiply by 2", and $ means "subtract second from first and square the result", then find: 7 $ 4 % 3

(a) 22
(b) 28
(c) 24
(d) 26

Q43. Which of the following shows a correlation, not causation?

(a) People who read more have better vocabulary.
(b) Exercising causes weight loss.
(c) Smoking causes cancer.
(d) A virus causes flu.

Q44. A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

TGA, WDD, _____, CXJ, FUM

(a) ZAG
(b) AZG
(c) FAZ
(d) CGA

Q45. A series is given with one wrong term. Select the wrong term from the given series.

NVK, KSH, HPE, EMB, BJZ

(a) EMB
(b) KSH
(c) BJZ
(d) HPE

Q46. A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

FCP, HYV, JUB, ?, NMN

(a) LQH
(b) GHK
(c) GOL
(d) LPG

YourMockTest.com — Free Study Material

Q47. A series is given with one term missing. Select the correct alternative from the given ones that will complete the series.

CTU, GPQ, KLM, ?, SDE

(a) HOJ
(b) JCl
(c) OHI
(d) OGJ

Q48. A series is given with one wrong term. Select the wrong term from the given series.

DMR, FOT, CLQ, GPV, BKP

(a) GPV
(b) CLQ
(c) DMR
(d) BKP

Q49. Which of the following words can be formed using the letters of the word only once?

GENERALIZATION

Word I: ALIENATING

Word II: RELEGATION

Word III: INTERZONE

(a) Only word I can be formed using the letters only once
(b) Only word I and II can be formed using the letters only once
(c) Only words I and III can be formed using the letters only once
(d) All the words can be formed using the letters only once.

Q50. Identify the pattern in the following sequence.

6, 15, 40, 104, 273

What is the next number in the sequence?

(a) 714
(b) 756
(c) 782
(d) 684

QUANTITATIVE APTITUDE

Q51. The average marks of 15 students in a science laboratory practical were 64. Later, it was found that the mark of one student was wrongly taken as 58 instead of 85. After correcting the mistake, the average increases. Now, a new student joins whose marks are 10% more than the new average. What is the final average of the group?

(a) 66.13
(b) 66.21
(c) 66.33
(d) 65.80

Q52. A person invests 35% of his income in mutual funds, 25% in fixed deposits, and the rest in recurring deposits. After 2 years, the mutual funds grow by 20%, fixed deposits by 10%, and recurring deposits by 15%. If his total income is Rs. 1,60,000, what is the total percentage return on his entire investment portfolio after 2 years?

(a) 15.5%
(b) 15.25%
(c) 14.75%
(d) 16%

YourMockTest.com — Free Study Material

Q53. The price of a laptop is increased by 25% and then a discount of 20% is offered on the new price. If the final price becomes Rs. 48,000, what was the original price?

(a) Rs. 52,000
(b) Rs. 50,000
(c) Rs. 51,200
(d) Rs. 48,000

Q54. A number has 2 in its unit place; then its square can be:

(a) 124
(b) 144
(c) 134
(d) 154

Q55. Find the square root of 2025.

(a) 35
(b) 45
(c) 55
(d) 65

Q56. A circular pipe has an external diameter of 42 cm and an internal diameter of 36 cm. Find the area of the cross-section of the pipe.

(a) 367.57 cm2
(b) 385.12 cm2
(c) 399.80 cm2
(d) 410.65 cm2

Q57. If (125x3 - 343y3) ÷ (5x - 7y) = Ax2 - By2 + Cxy, then find the value of (2A + B - C).

(a) -34
(b) -67
(c) -22
(d) -98

Q58. If $x^2 + y^2 + z^2 = 2(5x + 6y + 4z) - 77$, then find the value of 2(x + y) - 3z.

(a) 11
(b) 78
(c) 10
(d) 23

Q59. A right circular cone has a base circumference of 44 cm and a slant height of 14 cm. Find its curved surface area.

(a) 108 cm2
(b) 208 cm2
(c) 308 cm2
(d) 408 cm2

Q60. If sin A = 3/5, and A is acute, find the value of sec2 A - tan2 A.

(a) -2
(b) -3
(c) 0
(d) 1

Q61. If cos x = 12/13 and x in (0°, 90°), then find the value of $[(1 + \sin x)^2 + (1 - \sin x)^2] / \cos^2 x$.

(a) 117/36
(b) 91/35
(c) 97/36
(d) 65/37

YourMockTest.com — Free Study Material

Q62. A sum was invested at simple interest, and it became (132/115) times of what it had amounted to in 2 years when invested for 5 years. What is the rate of interest?

(a) 11%
(b) 4.42%
(c) 7%
(d) 5.47%

Q63. A quadrilateral ABCD is circumscribed about a circle. The sides of the quadrilateral are tangent to the circle. If the lengths of the side are given as AB = 9 cm, BC = 12 cm, and CD = 11 cm, what is the length of the fourth side, AD?

(a) 8 cm
(b) 10 cm
(c) 12 cm
(d) 14 cm

Q64. A, B, and C are partners in a Business. A and B are sharing the ratio in 3 : 4, and B : C are sharing in 5 : 9. At the end of the year, the profit received is Rs 71000. What is the share of C?

(a) Rs 32000
(b) Rs 34000
(c) Rs 36000
(d) Rs 38000

Q65. 4 boys and 6 girls can complete the work in 8 days, while 3 boys and 7 girls can complete it in 10 days. In how many days will 10 girls complete it?

(a) 10 days
(b) 42 days
(c) 45 days
(d) 40 Days

Q66. In triangle ABC, angle B = 90°, and AB = 12 cm, AC = 13 cm. Find the value of sin A + cos A.

(a) 1
(b) 12/13
(c) 17/13
(d) 13/17

Q67. If sec θ + tan θ = 5, and θ lies in the first quadrant, find the value of sin θ.

(a) 5/13
(b) 12/13
(c) 3/5
(d) 4/5

Q68. A chord passes through the center of the circle. What is it called?

(a) Radius
(b) Diameter
(c) Tangent
(d) Secant

Q69. The distance between two parallel chords of lengths 16 cm and 12 cm in a circle of radius 10 cm is:

(a) 2 cm or 14 cm
(b) 4 cm or 16 cm
(c) 6 cm or 18 cm
(d) 8 cm or 20 cm

YourMockTest.com — Free Study Material

Q70. A bus travels a distance of 180 km in 6 hours. The speed of a car is 20% more than that of the bus, and the speed of a bike is 25% more than that of the car. Find the difference between the time (in minutes) taken by the bike and the car to travel 50% more distance as travelled by the bus.

(a) 68 minutes
(b) 70 minutes
(c) 82 minutes
(d) 90 minutes

Q71. In a circle with center O, chords AB and CD intersect at point P. If angle AOC = 80° and angle BOD = 60°, what is the measure of angle APC?

(a) 60°
(b) 70°
(c) 80°
(d) 90°

Q72. If the angle subtended by a chord AC at the center O is 120° and the length of the chord AC is $10\sqrt{3}$ cm, what is the radius of the circle?

(a) 20 cm
(b) 5 cm
(c) 10 cm
(d) $5\sqrt{3}$ cm

Q73. An object is shaped like an ice cream cone, consisting of a hemisphere placed on top of a cone with an identical base radius. The volume of the hemispherical part is 144π cm3, and the height of the conical part is 8 cm. What is the total surface area of the object?

(a) 132 π cm2
(b) 108 π cm2
(c) 60 π cm2
(d) 168 π cm2

Q74. If $a = \sqrt{7} + \sqrt{5}$ and $b = \sqrt{7} - \sqrt{5}$, then $a^2 + b^2 = ?$

(a) 21
(b) 33
(c) 24
(d) 50

Q75. If a line passes through the points (1, 2) and (3, 6), what is its slope?

(a) 3
(b) 2
(c) 4
(d) 1/2

GENERAL AWARENESS

Q76. Which of the following pair regarding the parts of the Indian constitution is NOT correctly matched?

(a) Fundamental Right - Part III
(b) Panchayat - Part IX
(c) Elections- Part XVII
(d) Services Under the Union and the States - Part XIV

Q77. Who is the author of the novel 'The Blue Umbrella'?

(a) Ruskin Bond
(b) Arundhati Roy
(c) R. K. Narayan
(d) Khushwant Singh

YourMockTest.com — Free Study Material

Q78. As of July 2025, Vinai Kumar Saxena is the Lieutenant Governor of _____.

(a) Ladakh
(b) Puducherry
(c) Delhi
(d) Andaman and Nicobar Island

Q79. Which of the following organisation/body is related to Swavalambini Programme?

(a) NITI Aayog
(b) NHRC
(c) CIC
(d) NDMA

Q80. In July 2025, which scheme was launched to boost agricultural productivity across 100 districts with district-level interventions?

(a) PM Surya Ghar Muft Bijli Yojana
(b) PM Dhan-Dhaanya Krishi Yojana
(c) Mission for Aatmanirbharta in Pulses
(d) Krishi Samruddhi Yojana

Q81. In Cricket, which of the following is NOT a bowl type of Fast bowling?

(a) Bouncer
(b) Leg cutter
(c) In swinger
(d) Chinaman

Q82. Who won the first season of Ranji trophy in 1934-35?

(a) Bombay
(b) Madras
(c) Northern India
(d) Holkar

Q83. The "Mission Amrit Sarovar" initiative is anchored by the _____

(a) Ministry of Cooperation
(b) Ministry of Education
(c) Ministry of Earth Sciences
(d) Ministry of Rural Development

Q84. This question is in Hindi. Read it online.

Q85. The International Hockey Federation, was founded in Paris in _____.

(a) 1992
(b) 1932
(c) 1924
(d) 1988

Q86. Narayanrao Rajhauns, also known as Bal Gandharava, was a celebrated exponent of which state's musical tradition?

(a) Gujarat
(b) Haryana
(c) Maharashtra
(d) Meghalaya

Q87. Who is the author of the book 'Two Lives'?

(a) Vikram Seth
(b) Chetan Bhagat
(c) Sudha Murty
(d) Samit Basu

YourMockTest.com — Free Study Material

Q88. The Mahabodhi Temple, a UNESCO World Heritage site is in which of the following state?

(a) Haryana
(b) Bihar
(c) Punjab
(d) Assam

Q89. The Feroz Shah Kotla Fort, also known as the home of the djinns, was built in _____.

(a) 1321
(b) 1354
(c) 1267
(d) 1492

Q90. Which of the following cities is NOT one of the traditional locations for the Kumbh Mela?

(a) Ujjain
(b) Nashik
(c) Haridwar
(d) Varanasi

Q91. A communication satellite acts like a television tower placed at a height of _____ km.

(a) 1000
(b) 1500
(c) 22000
(d) 36000

Q92. The Aditya L-1 mission of ISRO was launched in which of the following year?

(a) 1999
(b) 2013
(c) 2017
(d) 2023

Q93. What is the SI unit of pressure?

(a) Ampere
(b) Watt
(c) Pascal
(d) Newton

Q94. The Chandrayaan-2 mission consisted of an orbiter, a lander named _____, and a rover named _____.

(a) Pragyan, Vikram
(b) Vikram, Pragyan
(c) Bheem, Shakti
(d) Aditya, Surya

Q95. Which global entity designated 2025 as the International Year of Quantum Science and Technology?

(a) UN
(b) WTO
(c) OECD
(d) NATO

Q96. The Pension Fund Regulatory and Development Authority was established in India in _____.

(a) 1992
(b) 2003
(c) 2009
(d) 2012

YourMockTest.com — Free Study Material

Q97. Which of the following is referred as Public sector unit (PSU) disinvestment?

(a) Sale of shares in PSU
(b) Purchase of share in PSU
(c) Allowing direct foreign direct investment in PSU
(d) Allowing indirect foreign direct investment in PSU

Q98. What is the maximum number of ministers, including the Prime Minister, allowed in the Council of Ministers as per the 91st Constitutional Amendment Act, 2003 of constitution of India?

(a) 10% of the total strength of Parliament
(b) 12% of the total strength of the House of the People
(c) 15% of the total strength of the House of the People
(d) No constitutional limit is prescribed

Q99. Which type of reactions are driven by the energy provided by ATP?

(a) Neutral reactions
(b) Redox reactions
(c) Endothermic reactions
(d) Exothermic reactions

Q100. Some of the earliest works in Tamil, known as Sangam literature, were composed around _____ years ago.

(a) 6500
(b) 5000
(c) 2300
(d) 3300

ANSWER KEY

1	a	2	b	3	c	4	b	5	b	6	a	7	c	8	c	9	d	10	b
11	b	12	d	13	a	14	b	15	c	16	b	17	b	18	b	19	b	20	b
21	a	22	c	23	b	24	b	25	b	26	b	27	c	28	b	29	d	30	a
31	d	32	c	33	c	34	b	35	b	36	c	37	a	38	b	39	c	40	b
41	d	42	c	43	a	44	a	45	c	46	a	47	c	48	a	49	d	50	a
51	b	52	a	53	d	54	b	55	b	56	a	57	a	58	c	59	c	60	d
61	c	62	d	63	a	64	c	65	d	66	c	67	b	68	b	69	a	70	d
71	b	72	c	73	a	74	c	75	b	76	c	77	a	78	c	79	a	80	b
81	d	82	a	83	d	84	c	85	c	86	c	87	a	88	b	89	b	90	d
91	d	92	d	93	c	94	b	95	a	96	b	97	a	98	c	99	c	100	c

SOLUTIONS

Q1. Answer: (a) The professors recommendation was

The correct answer is Option 1.

Key Points

• The primary issue in the sentence is the missing apostrophe in the noun phrase "The professors recommendation."

• The word "professors" is acting as a possessive noun, indicating that the recommendation belongs to the professor. The later use of the pronoun "she" confirms we are talking about a single, specific professor.

• To correctly show singular possession, an apostrophe followed by an 's' must be added, making it "professor's."

• Thus, the error is located in the segment The professors recommendation was.

Therefore, the correct answer is Option 1.

Correct Sentence: "The professor's recommendation was that the student, whom she had worked with for years, be granted a full scholarship."

Additional Information

• that the student – This segment is grammatically correct. It properly introduces the dependent noun clause.

• whom she had worked with for years – This segment is grammatically correct. "Whom" is appropriately used as the object of the preposition "with."

• be granted a full scholarship. – This segment is grammatically correct. It uses the appropriate subjunctive mood ("be granted"), which is required after words expressing a command, suggestion, or recommendation.

Q2. Answer: (b) discuss about the

The correct answer is Option 2.

Key Points

• The primary error in the sentence lies in the use of the preposition "about" immediately following the verb "discuss."

• The verb "discuss" is transitive, meaning it requires a direct object to receive the action. It inherently means "to talk about."

• Adding "about" creates a redundancy (essentially saying "talk about about"). The preposition should simply be removed.

• Thus, the error is located in the segment discuss about the.

Therefore, the correct answer is Option 2.

Correct Sentence: "We need to discuss the new marketing strategy in the next meeting."

Additional Information

• We need to – This segment is grammatically correct. It correctly pairs the subject "We" with the verb "need" and the infinitive marker "to."

• new marketing strategy – This segment is correct. It properly functions as the direct object noun phrase for the verb "discuss."

• in the next meeting – This segment is correct. It uses the appropriate prepositional phrase to establish where and when the discussion will take place.

Q3. Answer: (c) faltered

The solution is in Hindi. Read it online.

Q4. Answer: (b) Awareness

The solution is in Hindi. Read it online.

Q5. Answer: (b) Joyful

The solution is in Hindi. Read it online.

Q6. Answer: (a) Kindergarten

The correct answer is option 1.

Key Points

• The given question asks for the correctly spelled word among the options provided.

• The word "Kindergarten" is the correct spelling, which refers to a school or class for young children, typically between the ages of four and six, to prepare them for primary education.

• The other options are incorrect spellings:

• Kindergerten: Misspelled due to the incorrect use of "e" instead of "a."

• Kindergeren: Misspelled due to an extra "e" and missing letters.

• Kindergarden: Misspelled due to the use of "d" instead of "t."

Correct word: Kindergarten.

Additional Information

• The word "Kindergarten" originates from the German language, where "Kinder" means children, and "Garten" means garden, symbolizing a place where children are nurtured and educated like plants in a garden.

• Correct spelling is crucial for effective communication and avoids misunderstandings, especially in educational or professional settings.

Q7. Answer: (c) Social media alters the way teens think and feel about the world

The correct answer is 'Option 3'.

Key Points

• Cognitive and Emotional Reengineering:

• The passage explicitly questions whether these platforms are "reengineering the brains of adolescents, essentially changing the way they think and feel about the world." This highlights a fundamental shift in how teenagers process information and emotions.

• Impact on Attention and Rewards:

• The text mentions that "dopamine-reinforced cycles" habituate the brain for instant rewards, which lowers the ability for "focused, in-depth attention." This supports the idea that social media is fundamentally altering cognitive patterns.

• Analysis of Other Options:

• Option 1: Incorrect because the passage focuses on the psychological burden and negative outcomes like anxiety and depression, rather than "stronger relationships."

• Option 2: Incorrect because the passage suggests social media may harm cognitive development by lowering the ability for delayed rewards and focus.

• Option 4: Incorrect because the text describes a culture of "constant social comparison" and "idealised digital selves," which are presented as unhealthy forms of interaction.

Therefore, the correct answer is Social media alters the way teens think and feel about the world.

Additional Information

• FOMO (Fear of Missing Out): Described in the passage as a source of anxiety that leads to a "constant state of social and emotional monitoring."

• Corporate Responsibility: A major secondary theme in the passage, arguing whether the platforms themselves are accountable for the mental health effects caused by their algorithms.

Q8. Answer: (c) It weakens the ability for delayed reward and in-depth attention

The correct answer is 'Option 3'.

Key Points

• Instant Reward Habituation:

• The passage states that "dopamine-reinforced cycles of likes, shares, and notifications habituate the teen brain for instant rewards." This means the brain becomes accustomed to getting quick satisfaction rather than working toward long-term goals.

• Impact on Cognitive Skills:

• The text explicitly mentions that this habituation results in "possibly lowering the ability for delayed reward and focused, in-depth attention." This indicates a weakening of the neurological "muscles" required for patience and concentration.

• Analysis of Other Options:

• Option 1: Incorrect because the passage suggests social media lowers the ability for delayed gratification (reward), it does not promote it.

• Option 2: Incorrect because the cycle of instant rewards is described as detrimental to "focused, in-depth attention," which is necessary for long-term goals.

• Option 4: Incorrect because the passage highlights concerns like "anxiety," "depression," and "social comparison" rather than the development of deep connections.

Therefore, the correct answer is It weakens the ability for delayed reward and in-depth attention.

Additional Information

• Dopamine: A neurotransmitter in the brain that plays a major role in the "reward system." Social media is designed to trigger its release, creating a loop that can lead to compulsive usage.

• Delayed Reward: Also known as delayed gratification, this is the ability to resist the temptation of an immediate reward in hope of obtaining a more valuable reward in the future.

Q9. Answer: (d) Social media companies are morally and ethically responsible for the mental health effects on teens

The correct answer is 'Option 4'.

Key Points

• Ethical and Moral Accountability:

• The passage explicitly states that critics argue social media companies "have both moral and ethical responsibility to safeguard their youngest users." This stems from the belief that companies deliberately design addictive algorithms.

• Comparison to Other Industries:

• The text mentions that companies are responsible for the effects of their products "much like other industries," and that inaction regarding safety measures (like age verification) amounts to a "dereliction of responsibility."

• Analysis of Other Options:

• Option 1: Incorrect because critics argue the exact opposite—that companies are liable for the impact of their algorithms.

• Option 2: While content is mentioned, the passage focuses on the mental health effects and the psychological burden rather than just the content itself.

• Option 3: Incorrect because the passage suggests that critics want platforms to be held accountable for these issues, not exempt from them.

Therefore, the correct answer is Social media companies are morally and ethically responsible for the mental health effects on teens.

Additional Information

• Accountability: The state of being responsible and required to explain actions or decisions. In this context, it refers to legal and social consequences for the platforms.

• Addictive Algorithms: These are the mathematical rules used by platforms to determine what content a user sees, specifically designed to keep the user engaged for as long as possible.

Q10. Answer: (b) By increasing digital literacy and critical thinking education among young people

The correct answer is 'Option 2'.

Key Points

• Collective Paradigm of Responsibility:

• The passage concludes by suggesting a multi-faceted approach. One of the specific solutions mentioned is "enhanced digital literacy and critical thinking education among young people themselves." This aims to empower teens to navigate platforms more safely.

• Multi-Stakeholder Approach:

• The text argues that the solution is "not a matter of blaming one thing." Instead, it proposes a combination of government oversight, corporate value changes, and education.

• Analysis of Other Options:

• Option 1: The passage does not suggest banning or limiting usage entirely; it focuses on responsible limits and better management.

• Option 3: The text actually mentions that platforms cite the importance of parental control as a defense, and nowhere does it suggest reducing it.

• Option 4: While corporate accountability is a major part of the discussion, the passage explicitly calls for a "collective paradigm" that includes government and education, not just companies alone.

Therefore, the correct answer is By increasing digital literacy and critical thinking education among young people.

Additional Information

• Digital Literacy: The ability to find, evaluate, and communicate information through various digital platforms. It includes understanding how algorithms work and recognizing idealized content.

• Government Oversight: Refers to the regulatory role of the government in ensuring that companies follow ethical standards and protect users.

• Systematic Appraisal: The passage suggests looking at the "system" as a whole (corporate, government, and educational) rather than focusing on isolated incidents.

Q11. Answer: (b) Present everywhere

The solution is in Hindi. Read it online.

Q12. Answer: (d) The party was an absolute swell affair.

The solution is in Hindi. Read it online.

Q13. Answer: (a) A state of privileged seclusion

The solution is in Hindi. Read it online.

Q14. Answer: (b) The ability to turn anything into gold

The solution is in Hindi. Read it online.

Q15. Answer: (c) Cobbler

The solution is in Hindi. Read it online.

Q16. Answer: (b) Despise

The solution is in Hindi. Read it online.

Q17. Answer: (b) Nostalgia

The solution is in Hindi. Read it online.

Q18. Answer: (b) They say that the students are struggling with the new curriculum.

The correct answer is Option 2.

Key Points

• The given sentence is in the passive voice.

• To convert a sentence from passive to active voice, identify the subject, verb, and object.

YourMockTest.com — Free Study Material

• In the given passive voice sentence, "The students" is the subject, "are said" is the verb, and "to be struggling with the new curriculum" is the object.

• To form the active voice, replace the passive verb structure with an appropriate active verb structure.

• The active voice version of the sentence is: "They say that the students are struggling with the new curriculum."

Therefore, the correct answer is Option 2.

Correct Sentence: "They say that the students are struggling with the new curriculum."

Additional Information

• Option 1: "The new curriculum is said to be struggling with the students." – This reverses the roles of the subject and object incorrectly.

• Option 3: "The students are struggling with the new curriculum, it is said." – This sentence is in passive voice and not active.

• Option 4: "Someone said that the students were struggling with the new curriculum." – This changes the tense of the sentence unnecessarily.

Q19. Answer: (b) He says that he is building a model ship in his spare time.

The correct answer is Option 2.

Key Points

• Direct Speech: He says, "I am building a model ship in my spare time."

• Key Conversions:

• No Tense Change:

• When the reporting verb is in the present tense ("says") or future tense ("will say"), the tense inside the reported speech does not change. Therefore, the Present Continuous tense is maintained, changing only from "am building" to "is building" to match the new subject.

• "I" and "my" become "he" and "his":

• The first-person pronouns inside the quotation marks change to third-person pronouns to match the subject of the reporting verb ("He").

• Conjunction "that":

• The comma and quotation marks are removed, and the conjunction "that" connects the two clauses.

Therefore, the correct answer is Option 2.

Correct Sentence: He says that he is building a model ship in his spare time.

Additional Information

• Option 1: "He says that he was building a model ship in his spare time."

• Incorrect because it changes the tense to the past continuous ("was building"), which violates the rule for present tense reporting verbs.

• Option 3: "He said that he is building a model ship in his spare time."

• Incorrect because it alters the original reporting verb from the present ("says") to the past ("said").

• Option 4: "He says that a model ship is being built by him in his spare time."

• Incorrect because it converts the reported clause into the passive voice, which is a voice change, not a correct direct-to-indirect speech conversion.

Q20. Answer: (b) Each and every one of the boys took his seat

The correct answer is '2' i.e. Each and every one of the boys took his seat.

Key Points

• The sentence emphasizes individual members of the group with the phrase "each and every one."

• When referring to an individual in such contexts, the singular pronoun "his" is used, as it is grammatically correct to match the singular subject.

• The pronoun "their" (Options 1 and 4) is incorrect as it is plural, and the sentence requires a singular pronoun.

• Option 3 is incorrect because "each of the boy" is grammatically wrong; it should be "each of the boys."

Therefore, the correct answer is Option 2.

Complete Sentence: "Each and every one of the boys took his seat in the bus."

Additional Information

• Option 1: "took there seat" is incorrect because "there" is a homophone and refers to a place, not possession.

• Option 3: "Each of the boy" is incorrect because the noun "boy" should be plural ("boys") to align with the determiner "each."

• Option 4: "took their seat" is incorrect because "their" is plural, but the sentence refers to individual actions.

YourMockTest.com — Free Study Material

Q21. Answer: (a) to dispose of

The correct answer is 'to dispose of'.

Key Points

• The phrase "dispose of" is correct when referring to getting rid of or discarding something.

• The incorrect phrase "dispose off" is a common error but is grammatically incorrect.

• Options 2, 3, and 4 do not fit the grammatical structure and meaning in the given context.

Therefore, the correct answer is Option 1.

Complete Sentence: "As Farooque was migrating to the US, he wanted to dispose of his furniture."

Additional Information

• Option 2: "to dispose in" is incorrect because "dispose in" is not a valid phrase in English.

• Option 3: "disposal of" is incorrect because it changes the grammatical structure of the sentence and cannot replace the highlighted part.

• Option 4: "to dispose" is incomplete and does not specify what is being disposed of.

Q22. Answer: (c) The windows are being cleaned.

The correct answer is Option 3.

Key Points

• Passive voice structure: The object of the active voice sentence becomes the subject of the passive voice sentence.

• In the active voice, the sentence is: "Someone is cleaning the windows."

• To convert to passive voice: Place the object "the windows" at the beginning of the sentence.

• The verb "is cleaning" in the active voice changes to "are being cleaned" in the passive voice (present continuous passive).

• The subject "someone" is not necessary in the passive voice as it is implied.

Therefore, the correct answer is Option 3.

Correct Sentence: "The windows are being cleaned."

Additional Information

• Option 1: "The windows were being cleaned." – Incorrect as it is in the past continuous tense instead of present continuous.

• Option 2: "The windows have been cleaned." – Incorrect as it is in the present perfect tense, not present continuous.

• Option 4: "The windows are cleaned." – Incorrect as it is in the present simple passive, not present continuous.

Q23. Answer: (b) The old woman said to the children, "You should always be kind to animals, and I have been doing so my enti...

The correct answer is Option 2.

Key Points

• Indirect Speech: The old woman told the children that they should always be kind to animals and that she had been doing so her entire life.

• Key Conversions (Indirect to Direct):

• "told the children" becomes "said to the children"

• When converting back to direct speech, the reporting verb "told" followed by an object ("the children") changes back to "said to."

• "they should" becomes "You should"

• The third-person pronoun "they" reverts to the second-person pronoun "You" since the old woman is addressing the children directly. The modal verb "should" typically remains "should" in direct speech.

• "she had been doing" becomes "I have been doing"

• The Past Perfect Continuous tense ("had been doing") changes back to the Present Perfect Continuous tense ("have been doing") in direct speech.

• "her" becomes "my"

• The third-person possessive pronoun "her" reverts to the first-person "my."

Therefore, the correct answer is Option 2.

Correct Sentence: The old woman said to the children, "You should always be kind to animals, and I have been doing so my entire life."

Additional Information

• Option 1: "...I have done so my entire life."

• Incorrect because "have done" (Present Perfect) would change to "had done" (Past Perfect) in indirect speech, not the required "had been doing" (Past Perfect Continuous).

• Option 3: "...and I had been doing so my entire life."

• While grammatically possible in some contexts, backshifting usually means the direct speech was in the present perfect continuous. Using past perfect continuous in direct speech here alters the immediacy of her ongoing action.

• Option 4: "...You must always be kind..."

• Incorrect because the modal "must" generally changes to "had to" in indirect speech, whereas "should" remains "should."

Q24. Answer: (b) QSRP

The correct answer is Option 2.

Key Points

• The paragraph paints a cozy picture of a rainy night and the preparation of a warm beverage indoors.

• Sentence Q is the first sentence as it sets the scene by describing the weather conditions outside:

• "A downpour had started raining hard, beating against the windowpanes in steady rhythm."

• Sentence S follows because it acts as a transition, connecting the cold, rainy weather outside to the desire for a comforting drink:

• "It was a fantastic night to have a mug of hot cider."

• Sentence R is the third sentence as it brings the focus indoors to the kitchen, describing the sensory experience of preparing the cider mentioned in S:

• "The kitchen was filled with the scent of cinnamon and cloves, a comforting and warm smell."

• Sentence P is the final sentence as it concludes the short narrative with the logical final action of serving the drink:

• "She poured the hot liquid into her favourite mug."

• The correct sequence is QSRP.

Coherent paragraph after rearrangement:

"A downpour had started raining hard, beating against the windowpanes in steady rhythm. It was a fantastic night to have a mug of hot cider. The kitchen was filled with the scent of cinnamon and cloves, a comforting and warm smell. She poured the hot liquid into her favourite mug."

Q25. Answer: (b) RQSP

The correct answer is Option 2.

Key Points

• The paragraph follows a descriptive structure, moving from the broad environment (the sky) to specific sensory details on the ground (the beach and the ocean).

• Sentence R is the first sentence as it establishes the time of day and the overall setting with the sunset:

• "The sun went below the horizon, coloring the sky with orange, pink, and purple colors."

• Sentence Q follows as it introduces the character and his movement within the setting established in R:

• "He walked down the deserted beach, the sand cool against his bare feet."

• Sentence S is the third sentence as it shifts the focus to the auditory and visual details of the water next to the beach where he is walking:

• "The waves gently lapped at the shore, a constant, soothing sound."

• Sentence P is the final sentence as it rounds out the scene by adding the olfactory (smell) dimension to the visual and auditory ones already mentioned:

• "The air was heavy with the reek of seaweed and salt."

• The correct sequence is RQSP.

Coherent paragraph after rearrangement:

"The sun went below the horizon, coloring the sky with orange, pink, and purple colors. He walked down the deserted beach, the sand cool against his bare feet. The waves gently lapped at the shore, a constant, soothing sound. The air was heavy with the reek of seaweed and salt."

Q26. Answer: (b) Excitement or anxiety.

The logic is based on interpretation of nonverbal cues.

Option 1: Calmness and relaxation – Usually shown by slow speech and still body language.

Option 2: Excitement or anxiety – Indicated by rapid talking, fidgeting, and frequent glancing around.

Option 3: Disinterest in the conversation – Shown by lack of attention or disengagement, not active fidgeting.

Option 4: Deep concentration – Involves focused attention, not restless movements.

Among these, the described behavior (rapid speech, fidgeting, glancing around) best indicates excitement or anxiety.

Hence, the correct answer is Option 2.

YourMockTest.com — Free Study Material

Q27. Answer: (c) 65

The logic followed here is:

thus, "65" will replace the question mark in the given series.

Hence, the correct option is "Option 3".

Q28. Answer: (b) AFHTRE

The logic followed here is:

Given: MOTHER → OMHTRE

Similarly, for FATHER:

Thus, FATHER → A F H T R E

Hence, the correct answer is Option 2.

Q29. Answer: (d) 3.75 cups

The logic followed here is:

Logic: Use direct proportion to find the amount of flour needed for more cookies.

Calculation:

Flour for 12 cookies = 1.5 cups

Flour per cookie = 1.5 ÷ 12 = 0.125 cups

For 30 cookies:

0.125 × 30 = 3.75 cups

Hence, the correct answer is Option 4.

Q30. Answer: (a) 763

The logic followed here is:

Logic: Each digit is increased by 1.

Given: 786 : 897

Similarly, For 652:

So, 652 → 763

Hence, the correct answer is "Option 1".

Q31. Answer: (d) (19, 23)

The logic followed here is:

Logic: Twin prime numbers are two prime numbers whose difference is exactly 2.

Calculation:

Option 1: (11, 13) → Difference = 2

(twin primes)

Option 2: (41, 43) → Difference = 2

(twin primes)

Option 3: (59, 61) → Difference = 2

(twin primes)

Option 4: (19, 23) → Difference = 4

(not twin primes)

Hence, the correct answer is Option 4.

Q32. Answer: (c) 12

The logic followed here is:

Given series: 15, 25, 35, 45, …, 125

Logic: This is an arithmetic progression (AP) with first term a = 15 and common difference d = 10.

Here,

Number of terms = [(Last term − First term) ÷ Common difference] + 1

Calculation:

n = (125 − 15) ÷ 10 + 1

YourMockTest.com — Free Study Material

n = 110 ÷ 10 + 1

n = 11 + 1 = 12

Hence, the correct answer is "Option 3".

Q33. Answer: (c) 16666661

The logic followed here is:

Given series: 1221, 13331, 144441, 1555551

Logic:

The pattern is: 1 _ _ _ 1, where the middle digit increases and its count also increases.

1221 → two 2's

13331 → three 3's

144441 → four 4's

1555551 → five 5's

So, next term will have six 6's in the middle:

=> 1 666666 1 = 16666661

Hence, the correct answer is "Option 3".

Q34. Answer: (b) J73

The logic followed here is:

So, the next term = J73

Hence, the correct answer is Option 2.

Q35. Answer: (b) W

The logic followed here is:

Logic: Each letter is shifted +3 forward in the alphabet.

Given: J : M

Similarly, For T:

So, first blank = W

Now, second pair: R : ?

Thus, both blanks will be comleted by W the pattern followed is (+3 shift and +5 shift).

Hence, the correct answer is "Option 2".

Q36. Answer: (c) Either 5 or 6

Given:

Udit is elder to Pooja → Udit > Pooja

Swati is younger to Prerna and elder to Udit → Prerna > Swati > Udit

Anshu is younger to Swati, but not the youngest → Swati > Anshu > Pooja

Prerna is younger to both Anuj and Vidit → Anuj > Prerna and Vidit > Prerna

Now, arranging in table form (Eldest → Youngest):

Position	Person
1	Anuj / Vidit
2	Vidit / Anuj
3	Prerna
4	Swati
5	Udit
6	Anshu
7	Pooja

Now, persons younger than Vidit:

Prerna, Swati, Udit, Anshu, Pooja → 5

If Vidit is at top → 5 persons younger

YourMockTest.com — Free Study Material

If Vidit is second → 6 persons younger

Hence, the correct answer is Option 3.

Q37. Answer: (a) Only assumption I is implicit.

Given Statement:

The government decided to pay a compensation of Rs. 5 lakhs to the family members of those who were killed in the boat accident.

Now,

Assumptions:

1. Government treasury has enough funds to fulfil the compensation expenses –

Implicit (Announcing compensation assumes availability of funds to pay it.)

2. The government can try to bring down the incidents of boat accidents in the future –

Not Implicit (This is about future prevention and not directly related to the decision of compensation.)

Here, only assumption I is implicit.

Hence, the correct answer is "Option 1".

Q38. Answer: (b) Only II follows.

Given:

Statement:

Dengue fever broke out in some districts of a state. Hospital beds are full and several casualties were reported.

Action:

1. Health Minister of the state should be removed –

Does not follow (This is an extreme and indirect action. The statement does not provide evidence of fault or negligence by the minister, and removing them does not solve the immediate problem.)

2.Through different modes, general people should be made aware of preventive measures –

Follows (Creating awareness helps prevent the spread of dengue and directly addresses the situation.)

So, Only 2 follows.

Hence, the correct answer is "Option 2".

Q39. Answer: (c) HLM

The logic followed here is:

So, 'HLM' will replace the question mark in the given series.

Hence, the correct answer is "Option 3".

Q40. Answer: (b) W

The logic followed here is:

So, 'W' will replace the question mark in the given series.

Hence, the correct answer is "Option 2".

Q41. Answer: (d) NPRT

The logic followed here is:

So, 'NPRT' will replace the question mark in the given series.

Hence, the correct answer is "Option 4".

Q42. Answer: (c) 24

BODMAS Table:

Given equation: 7 $ 4 % 3

Now, if '%' stands for "add both numbers and multiply by 2", and '$' stands for "subtract second from first and square the result", then:

=> 7 $ 4 % 3

=> 7 $ 4 = $(7 - 4)^2 = 3^2 = 9$

=> 9 % 3 = $(9 + 3) \times 2 = 24$

=> 24

Hence, the correct answer is "Option 3".

Q43. Answer: (a) People who read more have better vocabulary.

The logic is based on correlation vs causation.

Option 1: People who read more have better vocabulary – Shows correlation; reading and vocabulary are related, but other factors may also influence vocabulary.

Option 2: Exercising causes weight loss – Direct cause-effect relationship.

Option 3: Smoking causes cancer – Established causal relationship.

Option 4: A virus causes flu – Direct biological cause.

Among these, only Option 1 represents correlation, not definite causation.

Hence, the correct answer is Option 1.

Q44. Answer: (a) ZAG

The logic followed here is:

So, 'ZAG' will replace the question mark in the given series.

Hence, the correct answer is "Option 1".

Q45. Answer: (c) BJZ

The logic followed here is:

So, 'BJZ' is the wrong term in the given series.

Hence, the correct answer is "Option 3".

Q46. Answer: (a) LQH

The logic followed here is:

So, 'LQH' will replace the question mark in the given series.

Hence, the correct answer is "Option 1".

Q47. Answer: (c) OHI

The logic followed here is:

So, 'OHI' will replace the question mark in the given series.

Hence, the correct answer is "Option 3".

Q48. Answer: (a) GPV

The logic followed here is:

Term	2nd - 1st	3rd - 2nd
DMR	13 - 4 = 9	18 - 13 = 5
FOT	15 - 6 = 9	20 - 15 = 5
CLQ	12 - 3 = 9	17 - 12 = 5
GPV	16 - 7 = 9	22 - 16 = 6
BKP	11 - 2 = 9	16 - 11 = 5

Now, checking each term in the series:

DMR

FOT

CLQ

GPV

BKP

So, 'GPV' is wrong term in the given series.

Hence, the correct answer is "Option 1".

Q49. Answer: (d) All the words can be formed using the letters only once.

Given word: GENERALIZATION

Letter	Frequency in GENERALIZATION
G	1

E	2
N	2
R	1
A	2
L	1
I	2
Z	1
T	1
O	1

Now, Checking the options:

Option	Word	Possible/Not
1	ALIENATING	All letters present within allowed frequency
2	RELEGATION	All letters present within allowed frequency
3	INTERZONE	All letters present within allowed frequency

Thus, all the given words can be formed using the letters of GENERALIZATION.

Hence, the correct answer is Option 4.

Q50. Answer: (a) 714

The logic followed here is:

thus, "714" will replace the question mark in the given series.

Hence, the correct option is "Option 1".

Q51. Answer: (b) 66.21

Given:

Number of students = 15

Initial average = 64

Wrong marks = 58

Correct marks = 85

New student marks = 10% more than new average

Formula Used:

Average = Total ÷ Number

Total = Average × Number

Percentage increase = Value × (1 + Percentage/100)

Calculation:

=> Initial total = 64 × 15 = 960

=> Corrected total = 960 - 58 + 85 = 987

=> New average = 987 ÷ 15 = 65.8

=> New student marks = 65.8 × (1 + 10 ÷ 100) = 65.8 × 1.1 = 72.38

=> Final total = 987 + 72.38 = 1059.38

=> Final average = 1059.38 ÷ 16 = 66.21

Therefore The correct answer is 66.21.

Q52. Answer: (a) 15.5%

Given:

Total income = 160000

Mutual fund investment = 35%

Fixed deposit investment = 25%

Recurring deposit investment = 40%

YourMockTest.com — Free Study Material

Mutual fund growth = 20%
Fixed deposit growth = 10%
Recurring deposit growth = 15%
Formula Used:
Investment = Total × Percentage ÷ 100
Return = Investment × Growth ÷ 100
Total percentage return = (Total return ÷ Total investment) × 100
Calculation:
=> Mutual fund investment = 160000 × 35 ÷ 100 = 56000
=> Fixed deposit investment = 160000 × 25 ÷ 100 = 40000
=> Recurring deposit investment = 160000 × 40 ÷ 100 = 64000
=> Mutual fund return = 56000 × 20 ÷ 100 = 11200
=> Fixed deposit return = 40000 × 10 ÷ 100 = 4000
=> Recurring deposit return = 64000 × 15 ÷ 100 = 9600
=> Total return = 11200 + 4000 + 9600 = 24800
=> Total percentage return = 24800 ÷ 160000 × 100 = 15.5
Therefore The correct answer is 15.5%.

Q53. Answer: (d) Rs. 48,000

Given:
Increase = 25%
Discount = 20%
Final price = 48000
Formula Used:
New value after increase = Original × (1 + Percentage ÷ 100)
Final value after discount = New value × (1 - Percentage ÷ 100)
Calculation:
=> Let original price = x
=> After 25% increase = x × (1 + 25 ÷ 100) = x × 1.25
=> After 20% discount = x × 1.25 × (1 - 20 ÷ 100) = x × 1.25 × 0.8
=> x × 1.25 × 0.8 = 48000
=> x × 1 = 48000
=> x = 48000
Therefore The correct answer is 48000.

Q54. Answer: (b) 144

Shortcut Trick
If a number ends in 2, its square must end in $2^2 = 4$.
While all given options end in 4, the result of a square must be a perfect square.
By inspection, $12^2 = 144$, while 124, 134, and 154 are not perfect squares.
Therefore The correct answer is 144.
Alternate Method
Given: The unit digit of the original number is 2.
Formula: If the unit digit of a number 'n' is 'a', then the unit digit of n^2 is the unit digit of a^2.
=> Unit digit of the square = 2 × 2 = 4.
=> Let us test consecutive perfect squares ending in 4:
=> $2^2 = 4$
=> $8^2 = 64$
=> $12^2 = 144$
=> $18^2 = 324$
=> Among the choices provided (124, 144, 134, 154), only 144 is a perfect square.
Therefore The correct answer is 144.

Additional Information

Unit Digit of Squares

The square of a number ending in 0, 1, 2, 3, 4, 5, 6, 7, 8, or 9 will always end in 0, 1, 4, 9, 6, 5, 6, 9, 4, or 1 respectively.

Properties of Perfect Squares

A perfect square never ends with the digits 2, 3, 7, or 8. Also, the number of zeros at the end of a perfect square is always even.

Digital Sum Property

The digital sum (sum of digits until a single digit is reached) of any perfect square is always 1, 4, 7, or 9.

Q55. Answer: (b) 45

Shortcut Trick

For any number ending in 25, the square root ends in 5.

Identify the remaining part of the number: 20.

Find two consecutive integers whose product is 20 => 4 × 5 = 20.

The smaller integer 4 is the tens digit of the root.

Therefore The correct answer is 45.

Alternate Method

Given: Number = 2025

Formula Used: Prime Factorization Method for square root calculation.

Calculations:

=> 2025 = 5 × 405

=> 405 = 5 × 81

=> 81 = 3 × 3 × 3 × 3

=> 2025 = (5 × 5) × (3 × 3) × (3 × 3)

=> $\sqrt{2025} = \sqrt{(5^2 \times 3^2 \times 3^2)}$

=> $\sqrt{2025} = 5 \times 3 \times 3$

=> $\sqrt{2025} = 45$

Therefore The correct answer is 45.

Additional Information

Square of Numbers Ending in 5

To square a number ending in 5 (say A5), the result is always [A × (A+1)] followed by 25. Example: 45^2 = [4 × 5]25 = 2025.

Perfect Square Identification

A perfect square never ends in the digits 2, 3, 7, or 8. Its digital sum (sum of digits reduced to a single digit) is always 1, 4, 7, or 9.

Estimation Method

Since $40^2 = 1600$ and $50^2 = 2500$, the square root of 2025 must lie between 40 and 50. Since it ends in 5, the only possible value is 45.

Q56. Answer: (a) 367.57 cm2

Given:

External diameter = 42 cm => R = 21 cm

Internal diameter = 36 cm => r = 18 cm

Formula used:

Area = $\pi(R^2 - r^2)$

Calculations:

=> Area = $3.1416 \times (21^2 - 18^2)$

=> = $3.1416 \times (441 - 324)$

=> = 3.1416×117

=> = 367.57 cm^2

Therefore Area = 367.57 cm^2.

Q57. Answer: (a) -34

Given:

$(125x^3 - 343y^3) \div (5x - 7y) = Ax^2 - By^2 + Cxy$

Formula Used:

$a^3 - b^3 = (a - b)(a^2 + ab + b^2)$

Calculation:

=> $125x^3 = (5x)^3$

=> $343y^3 = (7y)^3$

=> $(125x^3 - 343y^3) = (5x - 7y)(25x^2 + 35xy + 49y^2)$

=> $(125x^3 - 343y^3) \div (5x - 7y) = 25x^2 + 35xy + 49y^2$

=> Compare with $Ax^2 - By^2 + Cxy$

=> A = 25

=> -B = 49 => B = -49

=> C = 35

=> 2A + B - C = 2 × 25 + (-49) - 35

=> 50 - 49 - 35 = -34

Therefore The correct answer is -34.

Q58. Answer: (c) 10

Shortcut Trick

For an equation in the form $x^2 + y^2 + z^2 = 2(ax + by + cz) - k$, if $k = a^2 + b^2 + c^2$, then x = a, y = b, and z = c.

Comparing with the given equation: x = 5, y = 6, and z = 4.

Check k: $5^2 + 6^2 + 4^2 = 25 + 36 + 16 = 77$ (Matches the constant 77).

Required value = $2(5 + 6) - 3(4) = 2(11) - 12 = 22 - 12 = 10$.

Therefore The correct answer is 10.

Alternate Method

Given Expression: $x^2 + y^2 + z^2 = 2(5x + 6y + 4z) - 77$

Formula Used: $(a - b)^2 = a^2 - 2ab + b^2$

=> $x^2 + y^2 + z^2 = 10x + 12y + 8z - 77$

=> $x^2 - 10x + y^2 - 12y + z^2 - 8z + 77 = 0$

=> $(x^2 - 2 \times 5 \times x + 25) + (y^2 - 2 \times 6 \times y + 36) + (z^2 - 2 \times 4 \times z + 16) = 0$

=> $(x - 5)^2 + (y - 6)^2 + (z - 4)^2 = 0$

Since the sum of perfect squares of real numbers is zero, each term must be zero:

=> x − 5 = 0 => x = 5

=> y − 6 = 0 => y = 6

=> z − 4 = 0 => z = 4

Calculating the required value:

=> $2(x + y) - 3z = 2(5 + 6) - 3(4)$

=> $2(11) - 12 = 22 - 12 = 10$

Therefore The correct answer is 10.

Additional Information

Perfect Square Identity

The identities $(a + b)^2 = a^2 + 2ab + b^2$ and $(a - b)^2 = a^2 - 2ab + b^2$ are fundamental in solving quadratic variable equations.

Sum of Squares Principle

For any real numbers A, B, and C, if $A^2 + B^2 + C^2 = 0$, then A = 0, B = 0, and C = 0. This is used to extract values from combined square equations.

Coefficient Comparison Method

In competitive exams, if x^2 is on one side and 2(ax) is on the other, x usually equals a provided the constants balance out to complete the square.

Q59. Answer: (c) 308 cm2

Shortcut Trick

The Curved Surface Area (CSA) of a cone can be directly calculated using the base circumference (C) and slant height (l).

Formula: CSA = (1/2) × Circumference × Slant Height

=> CSA = (1/2) × 44 × 14

=> CSA = 22 × 14 = 308 cm^2

Therefore The correct answer is 308 cm^2.

YourMockTest.com — Free Study Material

Alternate Method

Given:

Base circumference of the cone = 44 cm

Slant height (l) of the cone = 14 cm

Formula Used:

1. Circumference = $2 \times \pi \times r$

2. Curved Surface Area (CSA) = $\pi \times r \times l$

Calculations:

=> $2 \times (22/7) \times r = 44$

=> $(44/7) \times r = 44$

=> $r = (44 \times 7) / 44$

=> $r = 7$ cm

Now, calculating the Curved Surface Area:

=> CSA = $\pi \times r \times l$

=> CSA = $(22/7) \times 7 \times 14$

=> CSA = 22×14

=> CSA = 308 cm^2

Therefore The correct answer is 308 cm^2.

Additional Information

Total Surface Area of a Cone

It is the sum of the curved surface area and the base area: TSA = $\pi r(l + r)$.

Volume of a Cone

The space occupied by the cone is given by the formula: $V = (1/3)\pi r^2 h$, where h is the vertical height.

Slant Height Relation

The relationship between slant height (l), radius (r), and height (h) is: $l^2 = r^2 + h^2$ or $l = \sqrt{(r^2 + h^2)}$.

Q60. Answer: (d) 1

Shortcut Trick

The expression sec2A − tan2A is a fundamental trigonometric identity.

By identity, for any angle A (where defined), sec2A − tan2A = 1.

The value of sin A = 3/5 is given to define the angle, but the result of the identity remains constant regardless of the specific value of A.

Therefore The correct answer is 1.

Alternate Method

Given: sin A = 3/5, where A is an acute angle.

Formula: sin A = Perpendicular (P) / Hypotenuse (H), sec A = H / Base (B), tan A = P / B.

=> Let Perpendicular (P) = 3 and Hypotenuse (H) = 5.

=> Base (B) = √(H2 − P2) = √(52 − 32) = √(25 − 9) = √16 = 4.

=> sec A = H / B = 5/4.

=> tan A = P / B = 3/4.

=> sec2A − tan2A = (5/4)2 − (3/4)2

=> sec2A − tan2A = 25/16 − 9/16 = 16/16 = 1.

Therefore The correct answer is 1.

Additional Information

Trigonometric Identities

There are three primary Pythagorean identities: $\sin^2\theta + \cos^2\theta = 1$, $1 + \tan^2\theta = \sec^2\theta$, and $1 + \cot^2\theta = \text{cosec}^2\theta$.

Acute Angle Ratios

For an acute angle ($0° < A < 90°$), all trigonometric ratios (sin, cos, tan, etc.) are positive.

Pythagorean Triplet

The numbers (3, 4, 5) form a Pythagorean triplet, where $3^2 + 4^2 = 5^2$, often used in right-angled triangle problems.

YourMockTest.com — Free Study Material

Q61. Answer: (c) 97/36

Given:

cosx = 12 ÷ 13

Formula Used:

$\sin^2x + \cos^2x = 1$

$(a + b)^2 + (a - b)^2 = 2(a^2 + b^2)$

Calculation:

=> sinx = 5 ÷ 13

=> $(1 + \sin x)^2 + (1 - \sin x)^2 = 2(1^2 + \sin^2 x)$

=> $= 2(1 + (5 \div 13)^2)$

=> $= 2(1 + 25 \div 169)$

=> $= 2 \times 194 \div 169 = 388 \div 169$

=> $\cos^2 x = (12 \div 13)^2 = 144 \div 169$

=> Required value = (388 ÷ 169) ÷ (144 ÷ 169)

=> = 388 ÷ 144

=> = 97 ÷ 36

Therefore The correct answer is 97 ÷ 36.

Q62. Answer: (d) 5.47%

Given:

Time1 = 2

Time2 = 5

Ratio of amounts = 132 ÷ 115

Formula Used:

Amount = Principal × (1 + Rate × Time ÷ 100)

Calculation:

=> Let principal = P, rate = R

=> Amount in 2 years = P × (1 + 2R ÷ 100)

=> Amount in 5 years = P × (1 + 5R ÷ 100)

=> P(1 + 5R ÷ 100) ÷ P(1 + 2R ÷ 100) = 132 ÷ 115

=> (1 + 5R ÷ 100) ÷ (1 + 2R ÷ 100) = 132 ÷ 115

=> 115(1 + 5R ÷ 100) = 132(1 + 2R ÷ 100)

=> 115 + 575R ÷ 100 = 132 + 264R ÷ 100

=> 575R ÷ 100 - 264R ÷ 100 = 132 - 115

=> 311R ÷ 100 = 17

=> 311R = 1700

=> R = 1700 ÷ 311

=> R ≈ 5.47

Therefore The correct answer is 5.47%.

Q63. Answer: (a) 8 cm

Given:

AB = 9

BC = 12

CD = 11

Formula Used:

In a tangential quadrilateral: AB + CD = BC + AD

Calculation:

=> AB + CD = BC + AD

=> 9 + 11 = 12 + AD

=> 20 = 12 + AD

=> AD = 20 - 12 = 8

YourMockTest.com — Free Study Material

Therefore The correct answer is 8 cm.

Q64. Answer: (c) Rs 36000

Given:
A : B = 3 : 4
B : C = 5 : 9
Total profit = 71000
Formula Used:
Equalize common term in ratios
Share = Total profit × Individual ratio ÷ Sum of ratios
Calculation:
=> A : B = 3 : 4
=> B : C = 5 : 9
=> LCM of 4 and 5 = 20
=> A : B = 15 : 20
=> B : C = 20 : 36
=> A : B : C = 15 : 20 : 36
=> Total ratio = 15 + 20 + 36 = 71
=> Share of C = 71000 × 36 ÷ 71
=> = 1000 × 36 = 36000
Therefore The correct answer is 36000.

Q65. Answer: (d) 40 Days

Given:
4 boys + 6 girls → 8 days
3 boys + 7 girls → 10 days
Formula Used:
Work = Rate × Time
Total work is constant
Calculation:
=> Let 1 boy = b, 1 girl = g
=> (4b + 6g) × 8 = 1
=> 4b + 6g = 1 ÷ 8
=> (3b + 7g) × 10 = 1
=> 3b + 7g = 1 ÷ 10
=> Multiply first by 3: 12b + 18g = 3 ÷ 8
=> Multiply second by 4: 12b + 28g = 4 ÷ 10
=> Subtract: (12b + 28g) - (12b + 18g) = 4 ÷ 10 - 3 ÷ 8
=> 10g = 2 ÷ 5 - 3 ÷ 8
=> 10g = 16 ÷ 40 - 15 ÷ 40 = 1 ÷ 40
=> g = 1 ÷ 400
=> Rate of 10 girls = 10 × 1 ÷ 400 = 1 ÷ 40
=> Time = 1 ÷ (1 ÷ 40) = 40
Therefore The correct answer is 40 days.

Q66. Answer: (c) 17/13

Given:
angle B = 90
AB = 12
AC = 13
Formula Used:
sinA = Opposite ÷ Hypotenuse
cosA = Adjacent ÷ Hypotenuse

YourMockTest.com — Free Study Material

In right triangle: Hypotenuse² = Base² + Perpendicular²
Calculation:
=> $BC^2 = 13^2 - 12^2$
=> $BC^2 = 169 - 144 = 25$
=> BC = 5
=> sinA = BC ÷ AC = 5 ÷ 13
=> cosA = AB ÷ AC = 12 ÷ 13
=> sinA + cosA = 5 ÷ 13 + 12 ÷ 13
=> = 17 ÷ 13
Therefore The correct answer is 17 ÷ 13.

Q67. Answer: (b) 12/13

Given:
secθ + tanθ = 5
Formula Used:
(secθ + tanθ)(secθ - tanθ) = 1
secθ = 1 ÷ cosθ
tanθ = sinθ ÷ cosθ
Calculation:
=> secθ - tanθ = 1 ÷ 5
=> Add: (secθ + tanθ) + (secθ - tanθ) = 5 + 1 ÷ 5
=> 2secθ = 26 ÷ 5
=> secθ = 13 ÷ 5
=> cosθ = 5 ÷ 13
=> tanθ = secθ - 1 ÷ 5 = 13 ÷ 5 - 1 ÷ 5 = 12 ÷ 5
=> sinθ = tanθ × cosθ
=> sinθ = (12 ÷ 5) × (5 ÷ 13) = 12 ÷ 13
Therefore The correct answer is 12 ÷ 13.

Q68. Answer: (b) Diameter

Shortcut Trick
By definition, a Chord is a straight line segment whose endpoints both lie on a circular arc.
The longest chord of any circle is the one that passes through the center.
This specific central chord is uniquely defined as the Diameter of the circle.
Therefore The correct answer is Diameter.
Alternate Method
Given: A chord that passes through the center of a circle.
Step-by-step Explanation:
=> A Chord is any line segment joining two points on the circumference of a circle.
=> If the endpoints of the chord are A and B, and the segment AB passes through Center O, then AO and OB are both radii.
=> Length of Chord AB = AO + OB = Radius + Radius.
=> Since 2 × Radius = Diameter, the chord passing through the center is the Diameter.
=> This is the longest chord possible in a circle.
Therefore The correct answer is Diameter.
Additional Information
Radius
A line segment connecting the center of the circle to any point on its boundary; it is exactly half of the diameter (r = d ÷ 2).
Secant
A straight line that intersects a circle at two distinct points, extending infinitely in both directions.
Tangent
A straight line that touches the circle at exactly one point and is perpendicular to the radius at that point.
Circumference

YourMockTest.com — Free Study Material

The linear distance around the edge of the circle, calculated using the formula 2 × π × r or π × d.

Q69. Answer: (a) 2 cm or 14 cm

Given:
Radius = 10
Chord1 = 16
Chord2 = 12
Formula Used:
Distance from center to chord = √(r² - (l ÷ 2)²)
Calculation:
=> Distance for chord 16 = √(10² - 8²)
=> = √(100 - 64) = √36 = 6
=> Distance for chord 12 = √(10² - 6²)
=> = √(100 - 36) = √64 = 8
=> Case 1 (same side) = |8 - 6| = 2
=> Case 2 (opposite sides) = 8 + 6 = 14
Therefore The correct answer is 2 cm or 14 cm.

Q70. Answer: (d) 90 minutes

Given:
Distance = 180
Time = 6
Car speed increase = 20%
Bike speed increase = 25%
Required distance = 50% more than 180 = 270
Formula Used:
Speed = Distance ÷ Time
Time = Distance ÷ Speed
New speed = Original × (1 + Percentage ÷ 100)
Calculation:
=> Bus speed = 180 ÷ 6 = 30
=> Car speed = 30 × (1 + 20 ÷ 100) = 30 × 1.2 = 36
=> Bike speed = 36 × (1 + 25 ÷ 100) = 36 × 1.25 = 45
=> Time taken by car = 270 ÷ 36 = 7.5 hours
=> Time taken by bike = 270 ÷ 45 = 6 hours
=> Difference = 7.5 - 6 = 1.5 hours
=> Difference in minutes = 1.5 × 60 = 90
Therefore The correct answer is 90 minutes.

Q71. Answer: (b) 70°

Given:
angle AOC = 80
angle BOD = 60
Formula Used:
Angle between intersecting chords = 1 ÷ 2 × (sum of intercepted arcs)
Calculation:
=> angle APC = 1 ÷ 2 × (80 + 60)
=> = 1 ÷ 2 × 140
=> = 70
Therefore The correct answer is 70°.

YourMockTest.com — Free Study Material

Q72. Answer: (c) 10 cm

Given:

Central angle = 120

Chord length = $10\sqrt{3}$

Formula Used:

Chord length = $2 \times r \times \sin(\theta \div 2)$

Calculation:

$\Rightarrow 10\sqrt{3} = 2 \times r \times \sin(120 \div 2)$

$\Rightarrow 10\sqrt{3} = 2 \times r \times \sin 60$

$\Rightarrow \sin 60 = \sqrt{3} \div 2$

$\Rightarrow 10\sqrt{3} = 2 \times r \times (\sqrt{3} \div 2)$

$\Rightarrow 10\sqrt{3} = r \times \sqrt{3}$

$\Rightarrow r = 10$

Therefore The correct answer is 10 cm.

Q73. Answer: (a) 132 π cm2

Shortcut Trick

From volume of hemisphere: $2/3\ \pi r^3 = 144\pi \Rightarrow r^3 = 216 \Rightarrow r = 6$ cm.

For conical part: r = 6, h = 8 => slant height l = 10 cm (using 6-8-10 Pythagorean triplet).

Total Surface Area = CSA of hemisphere + CSA of cone = $2\pi r^2 + \pi rl$.

TSA = $2\pi(6)^2 + \pi(6)(10) = 72\pi + 60\pi = 132\pi$ cm².

Therefore The correct answer is 132 π cm².

Alternate Method

Given: Volume of hemisphere = 144π cm³, Height of cone (h) = 8 cm.

Formula: Volume of hemisphere = $2/3\ \pi r^3$ | Slant height $l = \sqrt{(r^2 + h^2)}$ | TSA = $2\pi r^2 + \pi r l$.

$\Rightarrow 2/3 \times \pi \times r^3 = 144 \times \pi$

$\Rightarrow r^3 = (144 \times 3) \div 2$

$\Rightarrow r^3 = 72 \times 3 = 216$

$\Rightarrow r = \sqrt[3]{216} = 6$ cm.

$\Rightarrow$ Slant height (l) = $\sqrt{(6^2 + 8^2)} = \sqrt{(36 + 64)} = \sqrt{100} = 10$ cm.

$\Rightarrow$ Total Surface Area = Curved Surface Area of hemisphere + Curved Surface Area of cone

$\Rightarrow TSA = 2 \times \pi \times 6^2 + \pi \times 6 \times 10$

$\Rightarrow TSA = 2 \times \pi \times 36 + 60\pi$

$\Rightarrow TSA = 72\pi + 60\pi = 132\pi$ cm².

Therefore The correct answer is 132 π cm².

Additional Information

Volume of Combined Solids

Total volume is the sum of volumes: $V_{total} = V_{cone} + V_{hemisphere} = 1/3\ \pi r^2 h + 2/3\ \pi r^3$.

Surface Area of Combined Solids

When two solids are joined at identical bases, the common base area is hidden; only the external curved areas are added.

Cone Slant Height

Slant height l is the distance from the apex to any point on the base circumference, calculated as $l = \sqrt{(r^2 + h^2)}$.

Surface Area of Sphere

Total Surface Area of a full sphere is $4\pi r^2$, hence for a hemisphere, the curved area is $2\pi r^2$.

Q74. Answer: (c) 24

Shortcut Trick

Identify that a and b are conjugate pairs of the form (x + y) and (x − y).

Use the direct algebraic identity: $a^2 + b^2 = (x + y)^2 + (x - y)^2 = 2(x^2 + y^2)$

Here, $x = \sqrt{7}$ and $y = \sqrt{5}$.

$a^2 + b^2 = 2[(\sqrt{7})^2 + (\sqrt{5})^2] = 2(7 + 5) = 2 \times 12 = 24$

Therefore The correct answer is 24.

YourMockTest.com — Free Study Material

Alternate Method

Given: a = √7 + √5 and b = √7 − √5

Formula Used: $(x + y)^2 = x^2 + y^2 + 2xy$ and $(x - y)^2 = x^2 + y^2 - 2xy$

=> $a^2 = (\sqrt{7} + \sqrt{5})^2 = (\sqrt{7})^2 + (\sqrt{5})^2 + 2(\sqrt{7} \times \sqrt{5})$

=> $a^2 = 7 + 5 + 2\sqrt{35} = 12 + 2\sqrt{35}$

=> $b^2 = (\sqrt{7} - \sqrt{5})^2 = (\sqrt{7})^2 + (\sqrt{5})^2 - 2(\sqrt{7} \times \sqrt{5})$

=> $b^2 = 7 + 5 - 2\sqrt{35} = 12 - 2\sqrt{35}$

=> $a^2 + b^2 = (12 + 2\sqrt{35}) + (12 - 2\sqrt{35})$

=> $a^2 + b^2 = 12 + 12 = 24$

Therefore, the value of the expression is 24, which corresponds to option (3).

Therefore The correct answer is 24.

Additional Information

Algebraic Identities for Conjugates

For any two numbers x and y: $(x + y)^2 + (x - y)^2 = 2(x^2 + y^2)$ and $(x + y)^2 - (x - y)^2 = 4xy$.

Product of Conjugate Surds

The product of conjugate surds (√m + √n) and (√m − √n) always results in a rational number: (√m + √n)(√m − √n) = m − n.

Sum of Conjugate Surds

Adding conjugates (√m + √n) + (√m − √n) eliminates the second irrational term, resulting in 2√m.

Q75. Answer: (b) 2

Given:

Point 1: (1, 2)

Point 2: (3, 6)

Formula Used:

Slope (m) = (y2 - y1) ÷ (x2 - x1)

Calculation:

=> y2 = 6, y1 = 2, x2 = 3, x1 = 1

=> Slope (m) = (6 - 2) ÷ (3 - 1)

=> Slope (m) = 4 ÷ 2

=> Slope (m) = 2

Therefore The correct answer is 2.

Q76. Answer: (c) Elections- Part XVII

The correct answer is Option 3.

Key Points

• Fundamental Rights - Part III: The Fundamental Rights are enshrined in Part III of the Indian Constitution, covering Articles 12 to 35. These rights ensure the basic freedoms of citizens. Hence, this statement is correct.

• Panchayats - Part IX: Part IX of the Constitution, added by the 73rd Amendment Act of 1992, deals with Panchayati Raj institutions (local self-governance). Articles 243 to 243-O provide constitutional recognition to Panchayats. Hence, this statement is correct.

• Elections - Part XV: Elections in India are governed by Part XV of the Constitution, not Part XVII. Part XV encompasses Articles 324 to 329, which deal with the election process and the powers of the Election Commission. Part XVII, on the other hand, deals with the Official Languages. Hence, this statement is incorrect.

• Services under Union and States - Part XIV: Part XIV of the Constitution deals with Services under the Union and the States, covering Articles 308 to 323. It includes provisions for public services and Public Service Commissions. Hence, this statement is correct.

Additional Information

• Fundamental Rights:

• Fundamental Rights are considered the cornerstone of democracy in India.

• They are enforceable by courts and include rights such as Right to Equality, Right to Freedom, Right against Exploitation, Right to Freedom of Religion, Cultural and Educational Rights, and Right to Constitutional Remedies.

• These rights are applicable to Indian citizens, and some are extended to non-citizens as well.

• Panchayati Raj System:

• The system of Panchayati Raj was constitutionally established to decentralize governance.

• The 73rd Amendment Act introduced a three-tier structure: Gram Panchayat, Intermediate Panchayat, and District Panchayat.

• It empowers Panchayats to prepare plans for economic development and social justice.

• Elections:

• Elections in India are conducted under the supervision of the Election Commission, which is established by Article 324.

• India follows a first-past-the-post system for elections to the Lok Sabha and state legislative assemblies.

• The Election Commission ensures free and fair elections, maintains the electoral roll, and regulates political parties.

• Services under Union and States:

• The Constitution provides for All-India Services such as the IAS, IPS, and IFS, which are common to both the Union and the States.

• State services are governed by respective state public service commissions.

• Provisions ensure impartiality, efficiency, and accountability in public administration.

Important Points

• Part XV: This part of the Constitution is crucial for maintaining the democratic structure of the country. It includes provisions for delimitation, preparation of electoral rolls, and qualifications for membership of legislatures.

• Part XVII: Official Languages are covered under this part, with provisions for Hindi as the official language and safeguards for linguistic minorities.

• Evolution of Panchayats: The concept of Panchayati Raj dates back to the Balwant Rai Mehta Committee (1957), which recommended a three-tier system for rural governance.

• Judiciary and Fundamental Rights: The judiciary acts as a guardian of Fundamental Rights, ensuring they are upheld against any violation by the state or individuals.

Q77. Answer: (a) Ruskin Bond

The correct answer is Ruskin Bond.

Key Points

• Ruskin Bond is the author of the widely acclaimed novel 'The Blue Umbrella'. It is one of his most famous works, reflecting his signature style of storytelling with a touch of simplicity and emotional depth.

• The novel was published in the year 1974 and is categorized as a children's book, although it appeals to readers of all ages due to its universal themes.

• 'The Blue Umbrella' is set in a small village in the hills of India, showcasing the rural landscape and simple village life.

• The story revolves around a young girl named Binya and her fascination with a beautiful blue umbrella, which becomes the center of attention in the village.

• The novel conveys important moral lessons such as the value of kindness, contentment, and forgiveness, which are hallmarks of Ruskin Bond's literary works.

Additional Information

• About Ruskin Bond:

• Ruskin Bond is a celebrated Indian author of British descent, known for his contribution to Indian literature in English.

• He was born on 19 May 1934, in Kasauli, Himachal Pradesh, India.

• He has written over 500 short stories, novels, and essays, many of which are based on his experiences in the hills of India.

• Some of his other notable works include 'Room on the Roof,' 'A Flight of Pigeons,' and 'Rusty' series.

• Ruskin Bond was awarded the Sahitya Akademi Award in 1992 and the Padma Shri in 1999 for his contributions to literature.

• About 'The Blue Umbrella':

• The novel was adapted into a Bollywood film of the same name, directed by Vishal Bhardwaj in 2005.

• The film won the National Film Award for Best Children's Film in 2007.

• The plot highlights human emotions such as jealousy, generosity, and redemption through the journey of the protagonist, Binya, and the umbrella.

• Characteristics of Other Options:

• Arundhati Roy: She is the author of the Booker Prize-winning novel 'The God of Small Things'. Her works often deal with political and social issues.

• R. K. Narayan: He is best known for his 'Malgudi Days' series and novels like 'The Guide'. He is one of India’s most renowned authors, focusing on fictional South Indian towns.

• Khushwant Singh: Known for works like 'Train to Pakistan', he primarily focused on historical and political themes in his writings.

Important Points

• Theme of 'The Blue Umbrella':

• The central theme of the novel is the importance of kindness and simplicity. It reflects the idea that material possessions are not

as valuable as human relationships.

• The story also sheds light on human jealousy and redemption, portraying how people can change for the better.

• Impact on Readers:

• The novel has been widely appreciated for its engaging narrative and relatable characters, making it a timeless piece of literature.

• It continues to inspire readers across generations, especially young readers, to cultivate values of honesty and generosity.

Q78. Answer: (c) Delhi

The correct answer is Delhi.

Key Points

• Vinai Kumar Saxena was appointed as the Lieutenant Governor of Delhi on May 23, 2022, succeeding Anil Baijal.

• The role of the Lieutenant Governor (LG) of Delhi is critical since Delhi is a Union Territory with a special status under Article 239AA of the Indian Constitution.

• The Lieutenant Governor acts as the representative of the President of India in Delhi and oversees the administration of the National Capital Territory (NCT).

• Vinai Kumar Saxena had previously served as the Chairman of Khadi and Village Industries Commission (KVIC) before assuming the role of LG.

• Delhi's governance structure involves the LG, the Chief Minister, and the elected legislative assembly, with the LG having certain discretionary powers in administrative matters, especially relating to public order, police, and land.

Additional Information

• About Delhi:

• Delhi, officially known as the National Capital Territory (NCT), is India's capital city and serves as the country's political and administrative hub.

• It is a Union Territory with partial statehood, governed under Article 239AA of the Constitution.

• Key areas such as public order, police, and land fall under the jurisdiction of the Central Government and the LG, while other matters are handled by the elected government.

• Delhi's legislative assembly has 70 elected members.

• Role and Powers of the Lieutenant Governor:

• The Lieutenant Governor is appointed by the President of India and serves as the administrative head of the Union Territory.

• In Delhi, the LG has special powers in matters of public order, police, and land, which are reserved for the Central Government.

• The LG works closely with the elected government but also has discretionary powers as granted under the Constitution.

• Vinai Kumar Saxena:

• Before being appointed as the LG of Delhi, Saxena served as the Chairman of the Khadi and Village Industries Commission (KVIC), where he contributed significantly to promoting rural industries.

• He has been recognized for his contributions to fostering sustainable development and rural employment in India.

• Governance in Other Union Territories:

• Unlike Delhi, most Union Territories are directly governed by the Central Government through the LG or Administrator, except for Puducherry, which also has a legislative assembly and partial statehood similar to Delhi.

• Examples include Ladakh, Andaman and Nicobar Islands, and Chandigarh, which are administered by LGs or Administrators appointed by the President.

Important Points

• Article 239AA:

• This article of the Indian Constitution provides a special status to the National Capital Territory of Delhi, allowing it to have a legislative assembly and council of ministers.

• While the elected government handles most administrative matters, the LG retains authority over public order, police, and land.

• Delhi Government Structure:

• The Delhi government consists of the Chief Minister, the Council of Ministers, and the legislative assembly.

• The LG serves as the link between the Central Government and the elected government of Delhi.

• Disputes over jurisdiction between the LG and the Delhi government have occasionally arisen, especially in areas of administrative control.

• Current Developments:

• In recent years, the role of the LG in Delhi has been debated, leading to Supreme Court judgments clarifying the division of powers.

• The Government of National Capital Territory of Delhi (Amendment) Act, 2021 further defined the powers of the LG in Delhi.

YourMockTest.com — Free Study Material

Q79. Answer: (a) NITI Aayog

The correct answer is NITI Aayog.

Key Points

• Swavalambini Programme is an initiative aimed at promoting self-reliance and empowering individuals, especially women, by providing them with the necessary skills and resources to improve their livelihoods.

• NITI Aayog, established on 1st January 2015, is the primary policy think tank of the Government of India and plays a significant role in designing and implementing developmental programs like Swavalambini.

• The Swavalambini Programme aligns with NITI Aayog's goals of fostering sustainable development, reducing inequalities, and enhancing socio-economic growth through skill development and entrepreneurship promotion.

• Under this program, NITI Aayog collaborates with state governments, private organizations, and non-governmental organizations (NGOs) to implement and monitor its initiatives effectively.

• By focusing on capacity building and entrepreneurship, Swavalambini helps individuals become financially independent and contributes to the larger goal of India's economic development.

Additional Information

• NITI Aayog:

• NITI Aayog stands for National Institution for Transforming India. It replaced the Planning Commission of India.

• The primary aim is to act as a think tank and policy advisor to the Central and State governments, focusing on fostering cooperative federalism.

• It emphasizes bottom-up planning rather than the traditional top-down approach.

• Key initiatives by NITI Aayog include Aspirational Districts Programme, Atal Innovation Mission, and Digital India initiatives.

• Other Relevant Bodies in the Options:

• NHRC (National Human Rights Commission): Established in 1993, NHRC focuses on the protection and promotion of human rights in India. It does not deal with self-reliance programs like Swavalambini.

• CIC (Central Information Commission): The CIC was constituted under the Right to Information Act, 2005 to ensure transparency and accountability in governance. It is unrelated to the Swavalambini Programme.

• NDMA (National Disaster Management Authority): NDMA is responsible for disaster preparedness, mitigation, and response. It does not directly deal with skill development or livelihood programs.

• Focus of Swavalambini Programme:

• The program is aimed at empowering marginalized sections of society, particularly women and youth, through skill development and entrepreneurship training.

• It seeks to create an enabling environment for individuals to achieve economic independence and self-reliance.

• Such programs are often implemented in partnership with state governments, NGOs, and private sector entities.

• Important Examples:

• Similar self-reliance initiatives include Skill India Mission, Start-Up India, and Stand-Up India programs, which aim to enhance employability and entrepreneurship among youth.

• These programs align with India’s Sustainable Development Goals (SDGs), particularly Goal 8, which focuses on decent work and economic growth.

Q80. Answer: (b) PM Dhan-Dhaanya Krishi Yojana

The correct answer is PM Dhan-Dhaanya Krishi Yojana.

Key Points

• PM Dhan-Dhaanya Krishi Yojana was launched in July 2025 to address district-level agricultural challenges and boost productivity across 100 districts.

• The scheme focuses on local interventions tailored to the specific agricultural needs of each district, ensuring targeted improvements and sustainability.

• It aims to promote the use of advanced agricultural technologies, enhance irrigation facilities, and encourage the adoption of sustainable farming practices.

• The initiative also includes measures for soil health enhancement, better access to quality seeds, and reducing post-harvest losses through improved infrastructure.

• PM Dhan-Dhaanya Krishi Yojana is part of the broader government strategy to achieve Agricultural Aatmanirbharta (self-reliance) and ensure food security for India.

Additional Information

• PM Surya Ghar Muft Bijli Yojana:

• This scheme focuses on promoting solar energy generation at the household level, encouraging sustainable and clean energy practices.

• It aims to reduce dependency on conventional energy sources and promote the use of renewable energy across urban and rural areas.
• It provides subsidies for installing solar panels on rooftops, making solar energy affordable for the masses.
• Mission for Aatmanirbharta in Pulses:
• This mission focuses on achieving self-reliance in pulse production to address India's dependence on imports.
• It encourages farmers to cultivate pulses through financial incentives, improved seeds, and better irrigation facilities.
• The mission includes research and development initiatives to enhance pulse yield and resilience to pests and diseases.
• Krishi Samruddhi Yojana:
• This scheme is designed to promote rural prosperity through agricultural growth and development.
• It emphasizes improving farmer incomes by diversifying cropping patterns and increasing market access for agricultural products.
• It supports capacity building, skill development, and training programs for farmers to adopt modern agricultural techniques.
• PM Dhan-Dhaanya Krishi Yojana:
• Launched in July 2025, the scheme targets 100 districts with customized interventions to improve agricultural productivity.
• It includes measures for soil conservation, better access to fertilizers, and irrigation improvements tailored to district-specific needs.
• The initiative aims to achieve food security and enhance the livelihoods of farmers by addressing local agricultural challenges.

Important Points

• Focus on District-Level Interventions:
• The scheme emphasizes identifying and addressing specific agricultural challenges unique to each district.
• Districts were selected based on criteria such as soil health, irrigation needs, crop patterns, and farmer income levels.
• Advanced Agricultural Technologies:
• Promotes the use of modern farming equipment and techniques to enhance productivity and reduce manual labor.
• Encourages adoption of precision farming methods to optimize resource utilization.
• Alignment with Government Goals:
• The scheme aligns with the government's vision of Agricultural Aatmanirbharta and sustainable farming practices.
• It supports India's commitment to achieving the United Nations Sustainable Development Goals (SDGs) related to agriculture and food security.

Q81. Answer: (d) Chinaman

The correct answer is Chinaman.

Key Points

• Chinaman bowling is a type of spin bowling, not fast bowling. It is typically delivered by a left-arm unorthodox spinner who spins the ball away from a right-handed batsman.
• Fast bowling includes deliveries like Bouncer, Leg Cutter, In-Swinger, and other variations that rely on speed and seam movement.
• Bouncer: A short-pitched delivery aimed at the batsman's chest or head area, used to intimidate or induce mistakes. It is a fast bowling technique.
• Leg Cutter: A fast bowler's delivery that moves away from the batsman after pitching, achieved by spinning the ball slightly with the fingers.
• In-Swinger: A fast bowler's delivery that moves in towards the batsman after pitching, achieved by angling the seam towards the batter.
• Chinaman: A slower spin bowling technique used by left-arm spinners; it aims to deceive batsmen with flight and turn rather than pace. It does not belong to fast bowling.

Additional Information

• Fast Bowling:
• Fast bowling emphasizes speed, seam movement, and bounce to challenge batsmen. It is a crucial skill in cricket.
• Famous fast bowlers include Glenn McGrath, Shoaib Akhtar, Brett Lee, and Jasprit Bumrah.
• Key techniques include Yorker, Bouncer, Out-Swinger, In-Swinger, Leg Cutter, and Slower Ball.
• Fast bowlers often bowl at speeds exceeding 140 km/h and rely on fitness and stamina.
• Spin Bowling:
• Spin bowling relies on imparting spin to the ball to deceive batsmen with flight and turn.
• Spin bowlers are categorized as leg-spinners, off-spinners, or unorthodox spinners.
• Chinaman is a rare form of spin bowling; notable practitioners include Brad Hogg and Kuldeep Yadav.

YourMockTest.com — Free Study Material

• Spin bowling is most effective on pitches that support turn and grip for the ball.
• Comparison Between Fast and Spin Bowling:
• Fast bowlers rely on pace, seam movement, and bounce, while spin bowlers focus on turn and deception.
• Fast bowling is physically demanding, while spin bowling requires subtlety and control.
• Both types of bowling are vital for a balanced bowling attack in cricket.
• Notable Bowling Variations:
• Bouncer: Used strategically to intimidate batsmen or set up other deliveries.
• Yorker: A full-length delivery aimed at the batsman's toes, difficult to play.
• Googly: A deceptive spin delivery from a leg-spinner that turns opposite to the expected direction.
• Doosra: An off-spinner's delivery that turns away from the batsman instead of towards him.

Important Points

• Chinaman Bowling Origin: The term "Chinaman" reportedly originated from Ellis Achong, a West Indian spinner of Chinese descent, who bowled left-arm unorthodox spin against England in the 1930s.
• Fast Bowling Physics: Speed is achieved through biomechanical efficiency, including arm rotation, wrist position, and body momentum.
• Spin Bowling Strategy: Spin bowlers often target specific areas of the pitch to exploit its characteristics and deceive batsmen.
• Cricket Formats: Both fast and spin bowling are essential across formats like Test cricket, One-Day Internationals, and T20 matches.
• Modern Innovations: Bowlers continue to innovate with variations like slower bouncers, knuckleballs, and mystery spin deliveries.

Q82. Answer: (a) Bombay

The correct answer is Bombay.

Key Points

• The Ranji Trophy is a domestic first-class cricket championship played in India, named after the famous Indian cricketer Kumar Shri Ranjitsinhji.
• The inaugural season of the Ranji Trophy was held in the year 1934-35, and the final match took place between Bombay and Northern India.
• Bombay won the first-ever Ranji Trophy championship by defeating Northern India in the final. The final was played at the Bombay Gymkhana Ground.
• Bombay (now Mumbai) is historically one of the strongest teams in Indian domestic cricket, having won the Ranji Trophy a record number of times.
• The championship is played in a knockout format, and later evolved to include a league stage to identify the top teams for the finals.

Additional Information

• Ranji Trophy Format:
• The competition initially followed a knockout format but later adopted a combination of league and knockout stages to ensure fair play and enhance competitiveness.
• Teams represent different states, regions, and cricket associations in India.
• The tournament is governed by the Board of Control for Cricket in India (BCCI).
• Significance of Bombay's Victory:
• Bombay's victory in the inaugural season marked the beginning of its dominance in Indian domestic cricket.
• Bombay went on to become one of the most successful teams in the history of the Ranji Trophy, with over 40 titles to its name.
• Notable Players:
• Several legendary cricketers have represented Bombay in the Ranji Trophy, including Sunil Gavaskar, Dilip Vengsarkar, Sachin Tendulkar, and Ajinkya Rahane.
• The Ranji Trophy has been a platform for nurturing young talent and preparing players for international cricket.
• Historical Context:
• The Ranji Trophy was introduced to promote cricket in India and provide domestic players with competitive match experience.
• The tournament has contributed significantly to the development of Indian cricket and the identification of future stars.

Important Points

• Other Notable Teams:
• Madras (now Tamil Nadu), Holkar, and Delhi have also been prominent teams in the history of the Ranji Trophy.
• Holkar, a dominant team in the early years, produced cricket legends like C.K. Nayudu.
• Modern Era of Ranji Trophy:

• Over time, the format has evolved to include a group stage followed by knockouts, allowing more teams to participate.

• The Ranji Trophy continues to be a critical tournament for Indian cricket, serving as a stepping stone for players aspiring to represent the national team.

• Records and Achievements:

• Bombay holds the record for the most consecutive Ranji Trophy titles, winning 15 straight championships from 1958-59 to 1972-73.

• Players like Wasim Jaffer and Amol Muzumdar hold individual records for runs and centuries in the tournament.

Q83. Answer: (d) Ministry of Rural Development

The correct answer is Ministry of Rural Development.

Key Points

• The "Mission Amrit Sarovar" initiative was launched by the Ministry of Rural Development to address the issue of water conservation and rejuvenation of water bodies across India.

• This mission is aimed at creating and restoring at least 75 water bodies in each district of the country as part of the celebration of Azadi Ka Amrit Mahotsav.

• The initiative focuses on promoting community participation and involvement of local stakeholders, including Panchayati Raj Institutions, to ensure the sustainability of water bodies.

• The mission is aligned with the broader goals of achieving water security and promoting sustainable development by addressing water scarcity and improving irrigation facilities.

• The Ministry of Rural Development plays a pivotal role in the implementation of this initiative by coordinating with various state governments and leveraging existing schemes like MGNREGS (Mahatma Gandhi National Rural Employment Guarantee Scheme) for funding and manpower.

Additional Information

• Key Objectives of Mission Amrit Sarovar:

• To conserve water by creating and rejuvenating 75 water bodies per district as a tribute to India's 75 years of independence.

• To enhance the availability of water for agricultural, domestic, and ecological purposes, thereby contributing to water security.

• To involve local communities in water conservation efforts, ensuring the sustainability and upkeep of water bodies.

• Role of the Ministry of Rural Development:

• Acts as the nodal agency for the mission and provides guidance and support to state governments and local bodies.

• Utilizes existing development schemes, such as MGNREGS, for funding the construction and restoration of water bodies.

• Collaborates with other ministries, such as the Ministry of Jal Shakti and Ministry of Environment, for technical expertise and integrated efforts.

• Other Related Initiatives:

• Atal Bhujal Yojana: A scheme aimed at improving groundwater management in critical areas of India through community participation.

• Jal Shakti Abhiyan: A campaign to promote water conservation and rainwater harvesting through a time-bound, mission-mode approach.

• Catch the Rain Campaign: An initiative to improve water harvesting structures during the pre-monsoon and monsoon periods.

Important Points

• Key Features of Mission Amrit Sarovar:

• Focuses on water conservation through the construction and restoration of water bodies.

• Emphasizes community participation to ensure long-term sustainability.

• Promotes the use of technology, including GIS mapping and remote sensing, for identifying and monitoring water bodies.

• Aims to improve livelihood opportunities in rural areas by integrating with schemes like MGNREGS.

• Significance of Water Conservation:

• Addresses the issue of water scarcity, which affects agriculture, drinking water supply, and ecological balance.

• Ensures the availability of water resources for future generations.

• Improves agricultural productivity by providing reliable water sources for irrigation.

Q84. Answer: (c)

The correct answer is Neither I nor II.

Key Points

• Mission Mausam is not aimed at improving weather forecasting or developing high-resolution models for predicting monsoon behavior. Its primary focus is on connecting countries along the Indian Ocean region through cultural and economic linkages.

YourMockTest.com — Free Study Material

• The objective of Mission Mausam is to revive ancient maritime routes and cultural heritage that connected countries along the Indian Ocean.

• It is a project initiated by the Ministry of Culture in partnership with the Archaeological Survey of India (ASI) and Indira Gandhi National Centre for the Arts (IGNCA).

• Mission Mausam emphasizes historical maritime routes and aims to develop a better understanding of the cultural, economic, and religious interactions between countries in the Indian Ocean region.

• Both statements I and II are related to weather forecasting and monsoon prediction, which are not the objectives of Mission Mausam. Hence, Neither I nor II is correct.

Additional Information

• Mission Mausam:

• Launched in 2014 by the Ministry of Culture, it aims to rekindle the cultural and historical connections between countries along the Indian Ocean region.

• It focuses on the historical maritime heritage and the role of the Indian Ocean in shaping economic and cultural exchanges.

• Key components include studying coastal architecture, maritime traditions, and the movement of goods, ideas, and cultures.

• The project seeks to establish India's role as a connector of civilizations in the Indian Ocean.

• Indian Ocean Region (IOR):

• The Indian Ocean is the world's third-largest ocean and serves as a critical route for global trade and cultural exchange.

• Countries in this region share cultural, historical, and economic ties, which Mission Mausam seeks to explore and strengthen.

• IOR is vital for geopolitical and economic strategies, and projects like Mission Mausam are aimed at fostering cooperation among these nations.

• Weather Forecasting and Monsoon Prediction:

• Efforts to improve weather forecasting and monsoon prediction are undertaken by specialized organizations like the India Meteorological Department (IMD).

• High-resolution models for monsoon prediction are developed using advanced technologies and are unrelated to Mission Mausam.

• These initiatives are crucial for agriculture, disaster management, and water resource planning in India.

• Cultural Diplomacy:

• Mission Mausam is an example of soft power diplomacy, using cultural and historical connections to strengthen international relations.

• Such initiatives enhance India's image globally and foster mutual understanding among nations.

Important Points

• Ministry of Culture: The nodal ministry for Mission Mausam, focusing on preserving and promoting India's cultural heritage.

• Archaeological Survey of India (ASI): Plays a significant role in studying and documenting historical structures and sites associated with maritime heritage.

• Indira Gandhi National Centre for the Arts (IGNCA): Contributes to research and cultural studies under the Mission Mausam project.

• Geopolitical Significance: Strengthening cultural ties in the Indian Ocean region can complement India's strategic and economic interests.

Q85. Answer: (c) 1924

The correct answer is 1924.

Key Points

• The International Hockey Federation (FIH) was founded in 1924 in Paris, France. This was a pivotal step in organizing field hockey on a global scale.

• The establishment of the FIH was driven by the need for a governing body to oversee the rules and regulations of field hockey and promote the sport internationally.

• Field hockey was already popular in several countries, but the creation of FIH provided a standardized structure for international competitions.

• The founding members of the FIH included nations such as Austria, Belgium, Czechoslovakia, France, Hungary, Spain, and Switzerland. These countries contributed to the development of the sport globally.

• Since its inception, the FIH has played a significant role in organizing major hockey tournaments, including the Hockey World Cup and the Olympic Games hockey competitions.

Additional Information

• Field Hockey History:

• Field hockey traces its origins back to ancient civilizations, including Egypt, Greece, and Persia. The modern form of the game

YourMockTest.com — Free Study Material

emerged in the late 19th century in England.

• The first field hockey club, Blackheath Hockey Club, was established in London in 1861.

• Field hockey gained prominence as a competitive sport, leading to its inclusion in the 1908 Summer Olympics.

• FIH's Role:

• The FIH governs the rules of field hockey globally and ensures fair play and uniform standards during international tournaments.

• It is responsible for organizing events such as the Hockey World Cup, Champions Trophy, and Pro League, which showcase the best teams from across the world.

• The FIH also promotes field hockey through development programs, increasing participation in countries where hockey is less established.

• FIH Headquarters:

• The headquarters of the FIH is located in Lausanne, Switzerland, a hub for international sports organizations.

• The FIH moved its headquarters from Brussels, Belgium, to Lausanne in 2005 to align with other sports federations.

• Major Milestones in Field Hockey:

• Field hockey was first included in the Olympic Games in 1908, with men's teams competing.

• Women's hockey made its Olympic debut in 1980 during the Moscow Games.

• The Hockey World Cup, introduced in 1971, is one of the most prestigious tournaments organized by the FIH.

Important Points

• The FIH was established to provide a structured organization for field hockey, which was growing rapidly in popularity.

• The founding year, 1924, marked the formalization of the sport's governance on a global level.

• Since its creation, the FIH has expanded to include more than 130 member nations, showcasing the global appeal of field hockey.

• The FIH continues to play a critical role in promoting field hockey and organizing international competitions that bring together players and fans worldwide.

Q86. Answer: (c) Maharashtra

The correct answer is Maharashtra.

Key Points

• Narayanrao Rajhauns, popularly known as Bal Gandharva, was a celebrated figure in the musical and theatrical traditions of Maharashtra.

• He was a prominent exponent of Natya Sangeet, a unique genre of musical theatre that originated in Maharashtra and combines classical music with theatrical performances.

• Bal Gandharva gained immense popularity for his portrayal of female roles in Marathi theatre during the early 20th century, a time when women were not allowed to act on stage.

• The name “Gandharva” (meaning celestial musician) was given to him by Lokmanya Bal Gangadhar Tilak, reflecting his divine singing talent and contribution to music.

• His contributions to Maharashtra’s cultural heritage were immense, and he remains a revered figure in the state’s artistic history.

Additional Information

• Natya Sangeet:

• It is a form of musical theatre that blends classical Indian music with dramatic storytelling.

• Natya Sangeet evolved in Maharashtra during the late 19th and early 20th centuries and remains an integral part of Marathi culture.

• Bal Gandharva played a crucial role in popularizing Natya Sangeet by performing in numerous Marathi plays, such as Sangeet Saubhadra and Sangeet Manapman.

• Bal Gandharva’s Legacy:

• He is remembered not only for his singing but also for his dedication to the arts, often financing plays and productions at great personal expense.

• His life and contributions have been commemorated in various ways, including the Bal Gandharva Rang Mandir, a theatre in Pune named in his honor.

• Maharashtra’s Musical Tradition:

• Maharashtra has a rich cultural heritage, with contributions to Indian classical music, folk music, and theatrical traditions.

• Natya Sangeet and Bhavageet (lyrical poetry set to music) are two prominent musical forms from the region.

• Other Options:

• Gujarat: Known for its folk music forms like Garba and Dandiya.

• Haryana: Notable for Haryanvi folk music and Raag-based songs.

YourMockTest.com — Free Study Material

• Meghalaya: Famous for tribal music, including Khasi and Jaintia tunes.

Q87. Answer: (a) Vikram Seth

The correct answer is Vikram Seth.

Key Points

• Vikram Seth is the renowned Indian author who wrote the book 'Two Lives', published in 2005.

• The book is a biographical memoir that recounts the lives of Vikram Seth's great-uncle, Shanti Behari Seth, and his German-Jewish great-aunt, Henny Caro.

• 'Two Lives' explores themes such as love, war, loss, resilience, and cultural intersections, set against the backdrop of the 20th century.

• The narrative structure alternates between historical events and personal anecdotes, creating a vivid and emotional account of their lives.

• Vikram Seth is also known for his other literary works such as 'A Suitable Boy' and 'The Golden Gate', showcasing his versatility in both poetry and prose.

Additional Information

• Vikram Seth:

• Born on June 20, 1952, in Calcutta (now Kolkata), India.

• He is a celebrated author, poet, and novelist, recognized globally for his literary contributions.

• His works often explore interpersonal relationships and are set in diverse geographical and cultural contexts, reflecting his cosmopolitan outlook.

• 'Two Lives':

• The book provides a unique perspective on the personal and historical impact of World War II.

• Shanti Seth, one of the central figures, was an Indian immigrant to England who became a dentist despite losing an arm during the war.

• Henny Caro, his wife, was a Jewish refugee who fled Nazi Germany.

• Their story is both a personal memoir and a reflection on the broader socio-political events of the 20th century.

• Other Notable Works by Vikram Seth:

• 'A Suitable Boy' (1993): A monumental novel set in post-independence India, exploring family, politics, and social change.

• 'The Golden Gate' (1986): A novel in verse that captures the lives and relationships of a group of friends in California.

• 'An Equal Music' (1999): A poignant love story interwoven with the world of classical music.

• Comparison of Other Options:

• Chetan Bhagat: Known for popular contemporary novels like 'Five Point Someone' and '2 States', but he is not the author of 'Two Lives'.

• Sudha Murty: An acclaimed Indian author and philanthropist, known for books like 'Wise and Otherwise' and children's stories, but not linked to 'Two Lives'.

• Samit Basu: A science fiction and fantasy writer, recognized for his 'GameWorld Trilogy', but unrelated to 'Two Lives'.

Q88. Answer: (b) Bihar

The correct answer is Bihar.

Key Points

• The Mahabodhi Temple is located in Bodh Gaya, Bihar, India, and is one of the most sacred pilgrimage sites for Buddhists worldwide.

• It was declared a UNESCO World Heritage Site in 2002 due to its immense religious, historical, and architectural significance.

• The temple marks the location where Lord Buddha attained enlightenment under the sacred Bodhi tree around the 6th century BCE.

• The original structure was built by Emperor Ashoka in the 3rd century BCE, and the current temple is believed to date back to the 5th–6th century CE.

• The temple complex includes the Mahabodhi Stupa, the Bodhi Tree, the Vajrasana (Diamond Throne), and several smaller stupas and shrines around the main temple.

Additional Information

• History of Mahabodhi Temple:

• The temple was originally constructed by Emperor Ashoka, a staunch follower of Buddhism, as a tribute to Lord Buddha.

• The Vajrasana (Diamond Throne) in the temple premises is believed to be the seat where Buddha meditated during his enlightenment.

• Over the centuries, the temple has undergone several restorations and renovations by various rulers and Buddhist organizations.

• Architectural Features:

• The Mahabodhi Temple is an excellent example of Indian brickwork architecture from ancient times, featuring a pyramidal spire rising to a height of about 55 meters.

• The temple is surrounded by intricately carved railings made of stone, which depict scenes from Buddha's life, as well as motifs of lotus flowers and mythical creatures.

• The Bodhi Tree, located within the temple complex, is believed to be a direct descendant of the original tree under which Buddha attained enlightenment.

• Religious Significance:

• The Mahabodhi Temple is one of the four major pilgrimage sites related to the life of Buddha, the others being Lumbini, Sarnath, and Kushinagar.

• It serves as a center for meditation and teachings on Buddhism, attracting pilgrims and tourists from all over the world.

• The temple is also a hub for Buddhist festivals, such as Vesak, which celebrates Buddha's birth, enlightenment, and death.

• UNESCO Recognition:

• The Mahabodhi Temple was inscribed as a UNESCO World Heritage Site in 2002, acknowledging its cultural and spiritual importance.

• UNESCO's recognition has helped in preserving and promoting the temple as a global heritage site.

• Other Options:

• Haryana: No significant Buddhist heritage sites like the Mahabodhi Temple are located here.

• Punjab: Though historically significant, Punjab is not associated with Buddhist monuments.

• Assam: Known for its rich cultural heritage, Assam is home to some Buddhist sites but not the Mahabodhi Temple.

Important Points

• Geographical Location: The Mahabodhi Temple is situated in Bodh Gaya, which lies near the Falgu River in the state of Bihar, India.

• Tourism Impact: The temple attracts millions of pilgrims and tourists annually, contributing to the local economy and global awareness of Buddhist culture.

• Preservation Efforts: Organizations like UNESCO and the Archaeological Survey of India play a key role in maintaining and restoring the temple complex to its original grandeur.

• Connectivity: Bodh Gaya is well-connected via road, rail, and air, with the nearest airport being Gaya International Airport.

Q89. Answer: (b) 1354

The correct answer is 1354.

Key Points

• Feroz Shah Kotla Fort was built in the year 1354 by Feroz Shah Tughlaq, the Sultan of the Delhi Sultanate.

• It was constructed as the capital of his new city named Firozabad, which was the fifth city of Delhi.

• The fort is known for its unique architecture, including a prominent Ashokan Pillar brought from Ambala and placed on top of the fort.

• It is locally referred to as the "home of the djinns", as it is believed by locals that spirits or djinns inhabit the ruins.

• The fort reflects the architectural style of the Tughlaq dynasty, known for its simplicity and use of local resources like quartzite stone.

Additional Information

• Feroz Shah Tughlaq:

• He was the third ruler of the Tughlaq dynasty and ruled from 1351 to 1388.

• He is known for his administrative reforms, including the introduction of irrigation canals and the construction of new cities like Firozabad.

• He shifted the capital from Tughlaqabad to Firozabad.

• Ashokan Pillar:

• The fort houses one of the Ashokan Pillars, which was transported from Topra (Haryana) to Delhi under the direction of Feroz Shah Tughlaq.

• The pillar is inscribed with edicts of Emperor Ashoka, dating back to the 3rd century BCE.

• Architectural Features:

• The fort comprises a pyramid-shaped structure to support the Ashokan Pillar.

• It also includes a Jami Masjid (mosque), one of the largest mosques in Delhi during that time.

• The architecture primarily used quartzite stone, reflecting the simple yet robust style of the Tughlaq dynasty.

• Historical Significance:

YourMockTest.com — Free Study Material

• The fort served as the capital of the Delhi Sultanate under Feroz Shah Tughlaq.

• It played a crucial role in the administration and defense of the empire during the 14th century.

• Local Beliefs:

• The fort is associated with supernatural folklore, where locals believe that djinns inhabit its ruins.

• Even today, people visit the fort to offer letters and prayers to the djinns, seeking blessings and solutions to their problems.

Important Points

• Tughlaq Dynasty: The Tughlaq dynasty was a prominent ruling dynasty of the Delhi Sultanate, known for its administrative reforms and architectural achievements.

• Firozabad: The city of Firozabad, established by Feroz Shah Tughlaq, was one of the seven historic cities of Delhi.

• Preservation: Although in ruins today, the Feroz Shah Kotla Fort is maintained by the Archaeological Survey of India (ASI), highlighting its cultural and historical importance.

• Tourism: The fort is a popular tourist attraction, offering insights into the Tughlaq era's history and architecture.

Q90. Answer: (d) Varanasi

The correct answer is Varanasi.

Key Points

• Kumbh Mela is a major Hindu pilgrimage celebrated at four locations in India: Haridwar (Uttarakhand), Ujjain (Madhya Pradesh), Nashik (Maharashtra), and Prayagraj (Uttar Pradesh).

• The event is organized based on the alignment of celestial bodies and occurs every 12 years at each of the four traditional locations, with a rotation of the sites for the main event.

• Among the given options, Varanasi is not traditionally associated with hosting the Kumbh Mela, although it is a significant religious city and a spiritual hub for Hindus.

• Haridwar hosts the Kumbh Mela when Jupiter enters Aquarius and the Sun enters Aries, while Ujjain celebrates the Simhastha Kumbh when Jupiter is in Leo.

• Nashik and Prayagraj are also traditional venues for the Kumbh Mela based on specific astrological configurations. Hence, Varanasi does not fit the criteria.

Additional Information

• Kumbh Mela Locations:

• Haridwar: Located on the banks of the Ganges River, it is one of the most sacred cities in Hinduism. The Kumbh Mela here attracts millions of pilgrims.

• Ujjain: Situated on the banks of the Shipra River, Ujjain is known for the Simhastha Kumbh, which occurs when Jupiter is in Leo.

• Nashik: Located on the banks of the Godavari River, Nashik hosts the Kumbh Mela under specific planetary alignments.

• Prayagraj (formerly Allahabad): Situated at the confluence of the Ganga, Yamuna, and Saraswati rivers, Prayagraj is considered the most significant site for the Kumbh Mela.

• Significance of Varanasi: Although not a Kumbh Mela location, Varanasi is one of the holiest cities for Hindus, known for the Ganga ghats, Kashi Vishwanath Temple, and its association with moksha (liberation).

• Astrological Basis: The Kumbh Mela is held based on specific planetary configurations involving Jupiter, the Sun, and the Moon. Each of the four locations corresponds to distinct alignments.

• Historical Context: The tradition of the Kumbh Mela dates back thousands of years. It is mentioned in ancient scriptures such as the Puranas and has evolved into one of the largest gatherings of humanity.

Important Points

• Kumbh Mela Frequency: The event occurs every 12 years at each location, with an Ardh Kumbh (half Kumbh) every 6 years at Haridwar and Prayagraj.

• World Heritage Recognition: The Kumbh Mela was inscribed on UNESCO's Representative List of the Intangible Cultural Heritage of Humanity in 2017.

• Scale: It is considered the largest peaceful gathering of humanity, with millions of devotees attending to take a holy dip in the sacred rivers.

• Historical Mention: References to the Kumbh Mela can be found in ancient texts such as the Rigveda, Mahabharata, and various Puranas.

Q91. Answer: (d) 36000

The correct answer is 36000 km.

Key Points

• A communication satellite acts like a television tower placed at a significant altitude to facilitate communication over a wide area.

• The altitude of a communication satellite is generally at 36,000 km above the Earth’s surface, which is known as a geostationary

orbit.

• A satellite in a geostationary orbit appears stationary relative to the Earth's rotation, ensuring continuous coverage of a specific area on the Earth.

• This orbit is ideal for communication purposes as it allows satellites to cover a large area and provide services like television broadcasting, telecommunication, and internet access.

• The specific altitude of 36,000 km ensures that the satellite's orbital period matches the rotation period of the Earth, i.e., 24 hours.

Additional Information

• Geostationary Orbit:

• Geostationary orbit is located at an altitude of approximately 35,786 km above the equator.

• Satellites in this orbit revolve around the Earth at the same speed as the Earth rotates, making them appear stationary from the ground.

• This orbit is extensively used for communication satellites like television, telecommunication, weather monitoring, and GPS services.

• Types of Satellite Orbits:

• Low Earth Orbit (LEO): Located at altitudes between 160 km to 2,000 km, used for Earth observation and telecommunication.

• Medium Earth Orbit (MEO): Located at altitudes between 2,000 km to 35,786 km, often used for navigation satellites.

• Geostationary Orbit (GEO): Located at around 36,000 km, ideal for communication satellites.

• Functions of Communication Satellites:

• Provide television broadcasting, satellite radio, and internet access.

• Facilitate long-distance telecommunication and mobile services.

• Enable global coverage for weather forecasting, disaster management, and GPS navigation systems.

• Examples of Communication Satellites:

• INSAT series: India's communication satellites used for television broadcasting and meteorological purposes.

• GSAT series: Another set of Indian communication satellites providing telecommunication services.

• Intelsat: International satellites used for global communication services.

• Important Facts:

• The concept of geostationary satellites was first proposed by scientist Arthur C. Clarke in 1945.

• The first geostationary communication satellite was SYNCOM 3, launched by the USA in 1964.

• India's first communication satellite was INSAT-1A, launched in 1982.

Important Points

• Why 36,000 km is chosen:

• The altitude ensures the satellite's orbital period matches Earth's rotational period (24 hours).

• This allows for stable communication without the need for constant tracking.

• Applications:

• Used for live television broadcasts, including sports events and news.

• Critical for disaster management and emergency communication.

• Vital for modern navigation systems and global internet connectivity.

• Challenges:

• High cost of satellite launches and maintenance.

• Risk of space debris affecting operational satellites.

• Signal latency due to the large distance from Earth.

Q92. Answer: (d) 2023

The correct answer is 2023.

Key Points

• The Aditya L-1 mission was launched by the Indian Space Research Organisation (ISRO) in the year 2023.

• The mission is India's first dedicated solar observation mission, aimed at studying the Sun's corona, chromosphere, and solar winds.

• Aditya L-1 was launched on September 2, 2023, using the PSLV-C57 rocket from the Sriharikota spaceport.

• The spacecraft is designed to be placed in a halo orbit around the Lagrange Point 1 (L1) of the Sun-Earth system, approximately 1.5 million kilometers from Earth.

• The mission aims to provide crucial information about solar activities and their impact on Earth's space weather systems.

YourMockTest.com — Free Study Material

Additional Information

• Aditya L-1 Mission Objectives:

• To study the dynamics of the solar corona, which is the outermost layer of the Sun's atmosphere.

• To understand the processes behind the solar wind and its interaction with the Earth's magnetosphere.

• To observe the photosphere and chromosphere of the Sun and analyze their behavior.

• To monitor solar flares and coronal mass ejections (CMEs) that influence space weather.

• To investigate particle behavior in the Earth's vicinity caused by solar activities.

• Lagrange Point 1 (L1):

• Lagrange Point 1 (L1) is a stable location in space where the gravitational forces of the Sun and Earth balance the orbital motion of a satellite.

• It allows continuous observation of the Sun without interruptions caused by Earth's rotation or other celestial movements.

• The L1 point is located approximately 1.5 million kilometers from Earth in the direction of the Sun.

• Scientific Instruments on Aditya L-1:

• Visible Emission Line Coronagraph (VELC): Designed to study the solar corona and measure its magnetic field.

• Solar Ultraviolet Imaging Telescope (SUIT): Observes the photosphere and chromosphere in ultraviolet wavelengths.

• Aditya Solar Wind Particle Experiment (ASPEX): Studies solar wind particles and their properties.

• Plasma Analyser Package for Aditya (PAPA): Analyzes plasma in the solar wind.

• Significance of Aditya L-1:

• It is India's first solar observation mission, marking a major milestone in space research.

• The data collected will help scientists better understand space weather phenomena, which can impact satellite operations and communication systems.

• It contributes to global efforts in studying the Sun, alongside missions like NASA's Parker Solar Probe and ESA's Solar Orbiter.

Important Points

• PSLV-C57 Rocket:

• The Aditya L-1 mission was launched using the Polar Satellite Launch Vehicle (PSLV), a trusted workhorse of ISRO.

• PSLV-C57 ensured precise placement of the spacecraft in its intended trajectory toward the L1 point.

• Space Weather Impact:

• Space weather events, such as solar storms, can disrupt satellite communication, navigation systems, and power grids.

• Understanding these phenomena is crucial for mitigating their effects on technological systems.

• Global Collaborations:

• Aditya L-1 complements international missions like NASA's Parker Solar Probe, which studies the Sun's atmosphere and solar wind.

• Such missions contribute to a collective understanding of the Sun and its influence on the solar system.

Q93. Answer: (c) Pascal

The correct answer is Pascal.

Key Points

• The SI unit of pressure is the Pascal (Pa), named after the French mathematician and physicist Blaise Pascal.

• Pressure is defined as the force exerted per unit area. Mathematically, it is expressed as:

Pressure (P) = Force (F) / Area (A).

• One Pascal is equivalent to one Newton per square meter (N/m^2). This means that if a force of one Newton is applied uniformly over an area of one square meter, the resulting pressure is one Pascal.

• The concept of pressure is widely applicable in various fields, such as fluid mechanics, meteorology, and engineering.

• The Pascal is a relatively small unit, so in many practical cases, larger units like kilopascal (kPa) or megapascal (MPa) are used. For example, atmospheric pressure at sea level is approximately 101.3 kPa.

Additional Information

• Other Units of Pressure:

• Bar: 1 bar = 100,000 Pascals. It is commonly used in meteorology and engineering.

• Atmosphere (atm): 1 atm = 101,325 Pascals. Atmospheric pressure at sea level is often expressed in this unit.

• Millimeter of Mercury (mmHg): This unit is frequently used in medicine to measure blood pressure. 1 mmHg ≈ 133.322 Pa.

• Torr: Similar to mmHg; 1 Torr = 1 mmHg = 133.322 Pa.

• Applications of Pascal:

• In fluid mechanics, Pascal's principle explains how pressure applied to a confined fluid is transmitted uniformly in all directions.

• In engineering, it is used to design hydraulic systems such as brakes, lifts, and presses.
• In meteorology, atmospheric pressure is measured in Pascals to predict weather conditions.
• Comparison of Options:
• Ampere: The SI unit of electric current, unrelated to pressure.
• Watt: The SI unit of power, which measures the rate of energy transfer or work done.
• Newton: The SI unit of force, part of the formula for calculating pressure but not the unit for pressure itself.
• Important Facts: Blaise Pascal, after whom the unit is named, contributed significantly to the study of fluids and pressure, including the invention of the hydraulic press and the syringe.

Important Points

• Hydraulic Systems: Pascal's principle is the foundation of hydraulic systems, where a small force applied at one point is transmitted to create a larger force at another point.
• Weather Forecasting: Atmospheric pressure, often measured in Pascals or millibars, helps predict weather changes such as storms or clear skies.
• Blood Pressure Measurement: Blood pressure is commonly measured in mmHg, but it can be converted to Pascals for scientific purposes.

Q94. Answer: (b) Vikram, Pragyan

The correct answer is Vikram, Pragyan.

Key Points

• Chandrayaan-2 was India's second lunar exploration mission developed by the Indian Space Research Organisation (ISRO).
• The mission consisted of three components: an Orbiter, a Lander named Vikram, and a Rover named Pragyan.
• The Lander Vikram was named after Dr. Vikram Sarabhai, the father of the Indian space program.
• The Rover Pragyan (meaning 'wisdom' in Sanskrit) was designed to analyze the lunar surface and send data back to Earth.
• The mission aimed to explore the South Polar Region of the Moon, which had not been extensively studied by previous missions.
• ISRO launched Chandrayaan-2 on 22 July 2019 from the Satish Dhawan Space Centre in Sriharikota using the GSLV Mk III rocket.

Additional Information

• Orbiter:
• The Orbiter was equipped with eight scientific instruments to study the Moon from its orbit.
• It continues to function and provides valuable data about the lunar surface, atmosphere, and mineral composition.
• The orbiter's mission life was originally intended to be one year but has been extended due to its efficient fuel usage.
• Lander Vikram:
• The Lander Vikram was designed to perform a soft landing on the Moon's surface.
• Unfortunately, the lander lost communication with ISRO during its final descent, around 2.1 kilometers above the lunar surface.
• Despite this setback, the mission was considered a significant achievement for India's space exploration efforts.
• Rover Pragyan:
• The Rover Pragyan had a mission life of 14 Earth days and was equipped with two instruments to study the lunar soil and terrain.
• Its goal was to analyze the chemical composition of the Moon's surface and detect elements such as magnesium, aluminum, and silicon.
• However, it could not perform its tasks as the lander did not successfully deploy it on the lunar surface.
• Significance of Chandrayaan-2:
• The mission demonstrated India's capability to design, launch, and operate complex space missions.
• It contributed valuable insights into lunar science and enhanced India's reputation in the global space community.
• The data from the Orbiter continues to be used for scientific research and analysis.

Important Points

• Chandrayaan-1:
• India's first lunar mission, Chandrayaan-1, was launched on 22 October 2008.
• It discovered water molecules on the Moon, a groundbreaking finding in lunar science.
• Future Lunar Missions:
• ISRO is planning Chandrayaan-3, which will focus on achieving a successful soft landing on the Moon.
• The mission will include a lander and a rover, but no orbiter, as the Chandrayaan-2 orbiter is still operational.

YourMockTest.com — Free Study Material

• Global Lunar Exploration:

• Countries like the USA, Russia, and China have conducted successful lunar exploration missions.

• India's effort places it among the elite group of nations actively studying the Moon.

`

Q95. Answer: (a) UN

The correct answer is United Nations (UN).

Key Points

• The United Nations (UN) designated 2025 as the International Year of Quantum Science and Technology to emphasize its significance in shaping modern science and technology.

• This decision was made to foster a global understanding of quantum technologies, which have applications in various fields, including computing, communication, sensing, and cryptography.

• The declaration aims to promote collaboration among nations to advance research and development in quantum science, ensuring equitable access to its benefits.

• Quantum science has the potential to revolutionize industries such as healthcare, defense, artificial intelligence, and sustainable energy, making its global recognition crucial.

• The UN's role in declaring international observances highlights its efforts to unite countries for addressing global challenges and fostering scientific progress.

Additional Information

• United Nations (UN):

• The United Nations is an international organization founded in 1945 with the aim of promoting global peace, security, and cooperation among nations.

• It comprises 193 member states and works through various specialized agencies, including UNESCO, WHO, and FAO.

• The UN plays a crucial role in declaring international observances to draw attention to pressing global issues and encourage coordinated action worldwide.

• Examples of such observances include the International Year of Sustainable Tourism for Development (2017) and the International Year of Indigenous Languages (2019).

• Quantum Science and Technology:

• Quantum science explores the behavior of matter and energy at the atomic and subatomic levels, governed by the laws of quantum mechanics.

• Applications include quantum computing, which offers exponential speed-ups for complex computations, and quantum communication, ensuring secure data transfer through quantum encryption.

• Quantum technologies are also used in precision sensing and metrology, enabling advancements in fields like medical imaging and navigation systems.

• Countries including the United States, China, and India have launched national quantum initiatives to accelerate research and development in this transformative field.

• Importance of International Observances:

• International observances declared by the UN encourage global collaboration and knowledge sharing on critical topics.

• They serve as platforms to raise awareness among policymakers, researchers, and the general public about emerging scientific and social challenges.

• Such initiatives often lead to increased funding for research, capacity-building programs, and public-private partnerships to address the highlighted issues.

• The designation of 2025 as the International Year of Quantum Science and Technology is expected to spur innovations and create opportunities for nations to leverage quantum advancements.

• Other Global Entities:

• World Trade Organization (WTO): Focuses on global trade regulations and dispute resolution mechanisms, not science or technology development.

• Organisation for Economic Co-operation and Development (OECD): Works on economic growth and sustainable development but does not declare international years.

• NATO (North Atlantic Treaty Organization): A military alliance focusing on defense and security, not scientific initiatives.

Important Points

• Global Quantum Initiatives:

• China: Has invested heavily in quantum research, including launching the Micius Quantum Satellite for secure communication.

• United States: Established the National Quantum Initiative Act in 2018 to boost quantum science and technology.

• India: Launched its National Quantum Mission in 2023 to develop quantum computing and communication systems.

• UNESCO's Role:

• UNESCO (United Nations Educational, Scientific and Cultural Organization) supports scientific research and education globally.

• It often collaborates with the UN to promote initiatives like the International Year of Basic Sciences for Sustainable Development (2022).

• Future of Quantum Technologies:

• Quantum technologies are expected to play a pivotal role in addressing global challenges such as climate change, healthcare optimization, and cybersecurity.

• Investment in quantum research will likely lead to breakthroughs in fields like drug discovery, renewable energy, and artificial intelligence.

Q96. Answer: (b) 2003

The correct answer is 2003.

Key Points

• The Pension Fund Regulatory and Development Authority (PFRDA) was established by the Government of India in the year 2003.

• The PFRDA was initially set up as an interim regulator for the National Pension System (NPS), which was introduced for government employees except for the armed forces.

• Its primary role is to regulate and develop the pension sector in India to promote old-age income security.

• In 2013, the PFRDA Act was passed by Parliament, giving statutory status to the authority. This provided a legal framework for the regulation of the NPS and other pension schemes.

• The PFRDA is responsible for overseeing the operations of pension fund managers, ensuring the protection of subscribers' interests, and promoting transparency in the pension sector.

Additional Information

• National Pension System (NPS):

• The NPS was launched on 1 January 2004 for government employees and later extended to all citizens in 2009.

• It is a voluntary, defined contribution retirement savings scheme designed to enable subscribers to make systematic savings during their working life.

• The NPS offers two types of accounts: Tier I (mandatory retirement account) and Tier II (voluntary savings account).

• Subscribers can choose from various pension fund managers and investment options as per their risk appetite.

• PFRDA Act, 2013:

• The PFRDA Act, 2013 provides a statutory framework for the functioning of the PFRDA and the regulation of the pension sector in India.

• It allows the PFRDA to regulate all pension schemes except those under the Employees' Provident Fund Organisation (EPFO) and other social security schemes under the government.

• The Act also ensures the protection of subscribers' interests by mandating transparency and fair practices in the pension sector.

• Functions of PFRDA:

• Regulating and promoting the National Pension System (NPS).

• Ensuring the safety and growth of pension funds through stringent regulations.

• Approving and monitoring Pension Fund Managers (PFMs) and other intermediaries.

• Encouraging financial literacy about retirement planning and pensions.

• Other Pension Schemes Managed by PFRDA:

• Atal Pension Yojana (APY): A government-backed pension scheme for the unorganized sector launched in 2015.

• Corporate NPS: A variant of the NPS designed for employees of corporate entities.

Important Points

• The PFRDA plays a crucial role in ensuring retirement income security for Indian citizens by promoting and regulating a sustainable and transparent pension market.

• The NPS Trust, under the PFRDA, manages the funds contributed by subscribers and ensures they are invested appropriately.

• The PFRDA is headquartered in New Delhi, India.

• The Swavalamban Scheme, which aimed to provide a pension scheme for workers in the unorganized sector, was later merged with the Atal Pension Yojana.

Q97. Answer: (a) Sale of shares in PSU

The correct answer is Sale of shares in PSU.

Key Points

YourMockTest.com — Free Study Material

• Public Sector Unit (PSU) disinvestment refers to the process of the government selling its equity stake in Public Sector Undertakings (PSUs) to private entities, institutional investors, or the general public.

• The primary objective of disinvestment is to reduce the fiscal burden on the government, improve the efficiency and competitiveness of PSUs, and to mobilize funds for other developmental projects.

• This process is often carried out by the Department of Investment and Public Asset Management (DIPAM) under the Ministry of Finance in India.

• PSU disinvestment is categorized based on the percentage of shares sold: minority disinvestment (government retains majority control), majority disinvestment (government loses majority control), and complete privatization (government exits ownership entirely).

• The sale of shares can take place via Initial Public Offerings (IPO), Follow-on Public Offerings (FPO), strategic sale, or offer for sale (OFS) mechanisms. Hence, the correct answer is Sale of shares in PSU.

Additional Information

• Objective of Disinvestment:

• To improve financial health by reducing fiscal deficits and generating non-tax revenue for the government.

• To enhance the efficiency and professionalism of PSUs by involving private management and reducing bureaucratic control.

• To meet international obligations such as World Trade Organization (WTO) commitments by reducing state interference in industries.

• Methods of Disinvestment:

• IPO: Offering shares of a PSU to the public for the first time.

• OFS: Selling shares on the stock exchange platform to institutional and retail investors.

• Strategic Sale: Selling a substantial portion of government shares along with management control to a private entity.

• ETFs: Creating Exchange Traded Funds to pool PSU shares and offer them to investors.

• Examples of PSU Disinvestment in India:

• In 2021, the government disinvested its stake in Air India, transferring ownership to the Tata Group.

• The LIC IPO in 2022 marked one of the largest disinvestments in India, raising significant funds.

• Other notable examples include the disinvestment of PSUs like Bharat Petroleum Corporation Limited (BPCL) and Container Corporation of India (CONCOR).

• Challenges in Disinvestment:

• Resistance from employees and trade unions fearing job losses and changes in work culture.

• Unfavorable market conditions may lead to lower valuations of PSUs.

• Concerns over monopoly creation if strategic sales lead to market concentration.

• Political opposition to privatization as it may be perceived as selling national assets to private entities.

Important Points

• Department of Investment and Public Asset Management (DIPAM):

• Established to manage the disinvestment process in India and oversee the sale of equity in PSUs.

• Responsible for formulating policies and guidelines for disinvestment.

• National Investment Fund (NIF):

• Created in 2005 to channelize disinvestment proceeds for social welfare projects and capital investment in PSUs.

• The fund is managed by professional asset managers to ensure efficient utilization.

• Fiscal Targets:

• The government sets annual disinvestment targets in the Union Budget to raise funds for fiscal management.

• For example, in FY 2021-22, the disinvestment target was set at INR 1.75 lakh crore.

`

Q98. Answer: (c) 15% of the total strength of the House of the People

The correct answer is 15% of the total strength of the House of the People.

Key Points

• The 91st Constitutional Amendment Act, 2003 introduced a cap on the size of the Council of Ministers in India.

• As per the amendment, the total number of ministers, including the Prime Minister, in the Council of Ministers cannot exceed 15% of the total strength of the House of the People (Lok Sabha).

• This limit applies to both the Union and State governments, ensuring that the size of the executive remains proportionate to the legislature.

• The amendment was introduced to curb the practice of unnecessarily expanding the Council of Ministers, which could lead to inefficiency and misuse of public resources.

• This provision is now enshrined under Article 75(1A) of the Constitution of India for the Union government and Article 164(1A) for State governments.

Additional Information

• 91st Constitutional Amendment Act, 2003:

• This amendment was enacted to bring about political stability and prevent defections and arbitrary expansion of the Council of Ministers.

• It also added provisions to strengthen the anti-defection law by disqualifying defectors from holding ministerial positions or other remunerative posts.

• The amendment mandates that the total number of ministers in a state, including the Chief Minister, cannot exceed 15% of the total members of the Legislative Assembly.

• Article 75(1A):

• This article specifies the limit on the size of the Council of Ministers at the Union level.

• It ensures that the executive branch operates within a defined framework to avoid inefficiency.

• Article 164(1A):

• This article applies the same 15% rule to the Council of Ministers at the state level, including the Chief Minister.

• This ensures uniformity in governance practices across the Union and the States.

• Reasons for the 91st Amendment:

• The amendment was introduced to address issues related to political instability caused by frequent defections and coalition pressures.

• It aimed to prevent the misuse of ministerial appointments as a tool to gain political support.

Important Points

• Anti-Defection Law:

• The 91st Amendment strengthened the anti-defection provisions outlined in the Tenth Schedule of the Constitution.

• It barred defectors from holding ministerial or remunerative positions for the remainder of the legislative term.

• Impact of the 91st Amendment:

• It reduced the size of bloated Cabinets, improving efficiency and reducing the financial burden on the exchequer.

• It promoted political discipline and curbed opportunistic defections.

• Exceptions:

• In cases where the total strength of the legislature is very small, states may have a minimum of 12 ministers, regardless of the 15% cap.

`

Q99. Answer: (c) Endothermic reactions

The correct answer is Endothermic reactions.

Key Points

• ATP (Adenosine Triphosphate) is the primary energy currency of the cell. It provides the necessary energy to drive many biochemical reactions, especially those that are endothermic (energy-absorbing).

• Endothermic reactions are chemical reactions that require an input of energy to proceed. In biological systems, this energy is often supplied by the hydrolysis of ATP.

• During ATP hydrolysis, the bond between the terminal phosphate group is broken, releasing approximately 30.5 kJ/mol of energy. This energy is utilized to fuel reactions that would not occur spontaneously.

• Examples of processes driven by ATP in endothermic reactions include protein synthesis, active transport of molecules across membranes, and muscle contraction.

• ATP coupling ensures that the energy from ATP hydrolysis is transferred directly to the endothermic process, making it energetically favorable.

Additional Information

• ATP Structure:

• ATP consists of an adenine base, a ribose sugar, and three phosphate groups.

• The high-energy bonds between the phosphate groups are known as phosphoanhydride bonds.

• The hydrolysis of these bonds releases energy, which is used for cellular work.

• Endothermic Reactions in Biology:

• Examples of endothermic reactions include the synthesis of macromolecules such as DNA, RNA, and proteins.

• Active transport processes, such as the sodium-potassium pump, rely on ATP to transport ions against their concentration gradients.

YourMockTest.com — Free Study Material

• Photosynthesis is another example where energy (from sunlight) is absorbed to drive the reaction.

• ATP Coupling Mechanism:

• ATP couples with endothermic reactions via enzymes to lower the activation energy and make the reactions proceed efficiently.

• For instance, during protein synthesis, ATP is required to charge aminoacyl-tRNA molecules, which are then used in ribosomes to form peptide bonds.

• Other Types of Reactions:

• Neutral reactions: These reactions do not involve energy input or release, typically seen in acid-base neutralizations.

• Redox reactions: Involve the transfer of electrons between molecules and are often coupled to ATP generation in cellular respiration.

• Exothermic reactions: These reactions release energy and do not require ATP; examples include combustion and certain metabolic pathways like glycolysis.

Important Points

• ATP Regeneration:

• Cells regenerate ATP through processes such as cellular respiration (glycolysis, Krebs cycle, and oxidative phosphorylation).

• A single human cell uses and regenerates its entire ATP pool approximately once every minute.

• Energy Storage:

• ATP is not a long-term energy storage molecule; instead, energy is stored in molecules like glycogen and fats.

• ATP serves as an intermediary, transferring energy from storage molecules to cellular processes.

• ATP and Metabolism:

• Catabolic pathways generate ATP by breaking down complex molecules, while anabolic pathways consume ATP to build complex molecules.

• This balance of energy production and consumption is critical for maintaining cellular homeostasis.

Q100. Answer: (c) 2300

The correct answer is 2300 years ago.

Key Points

• Sangam literature refers to the earliest known Tamil texts, which are considered the foundation of Tamil culture and heritage. These works date back approximately 2300 years.

• The Sangam era is believed to have existed between the 3rd century BCE to the 3rd century CE. The term "Sangam" refers to academies or assemblies of Tamil poets and scholars during this period.

• Sangam literature consists of poems and prose that focus on themes like love, war, governance, and ethics. These texts are divided into three categories: Aham (love and emotion), Puram (war, heroism, and external events), and narrative epics.

• Key works of Sangam literature include Tolkappiyam (an ancient Tamil grammar text), Kuruntokai, Akananuru, Purananuru, and Pattuppāttu.

• The Sangam period is considered a golden age in Tamil history, marking advancements in literature, trade, governance, and culture. It is also a testament to the rich linguistic and philosophical traditions of ancient Tamil society.

Additional Information

• Sangam Period Historical Context:

• The Sangam period corresponds to the Iron Age in South India, during which Tamil civilization flourished.

• It was marked by organized kingdoms such as the Chera, Chola, and Pandya dynasties, which contributed significantly to Tamil art, literature, and trade.

• Trade routes during the Sangam era connected Tamil regions to Rome, Egypt, and Southeast Asia, fostering cultural and economic exchanges.

• Significance of Sangam Literature:

• Sangam literature offers insights into the social structure, economy, and religious practices of ancient Tamil society.

• These texts preserve ancient Tamil grammar, vocabulary, and poetic traditions, serving as a linguistic treasure for modern scholars.

• Sangam works also highlight the importance of nature and human emotions, reflecting the deep connection between people and their environment.

• Key Characteristics of Sangam Literature:

• Sangam texts are known for their brevity, imagery, and lyrical beauty. They often employ metaphors and similes to convey complex emotions.

• The literature is divided into Akam (inner) and Puram (outer) themes, representing private and public aspects of life.

• These works also emphasize ethical values, such as honesty, bravery, and compassion, which were revered in Tamil society.

YourMockTest.com — Free Study Material

• Preservation and Study:

• Sangam literature has been preserved through palm-leaf manuscripts and oral traditions. Modern scholars have studied these texts to reconstruct ancient Tamil history.

• The Tamil Nadu government and academic institutions have undertaken efforts to digitize and translate Sangam texts for global accessibility.

• These texts are celebrated annually during Tamil Literature Day, promoting awareness of Tamil heritage.

Important Points

• 2300 years ago is a widely accepted timeline for the Sangam period based on archaeological evidence and cross-references from ancient texts like Ashokan inscriptions.

• The Sangam period is distinct from later Tamil literature, such as the Bhakti movement poetry and epics like Kamba Ramayanam.

• Sangam works have influenced classical Tamil art forms like Bharatanatyam, folk music, and temple architecture.

• UNESCO has recognized Tamil as one of the oldest surviving classical languages, with Sangam literature as its primary evidence.

More previous year papers and mock tests: **www.yourmocktest.com/pyq**

YourMockTest.com – Free Study Material