# RRB NTPC (Graduate) CBT-I Official Paper (Held On: 24 Mar, 2026 Shift 2) (Previous Year Paper)

RRB NTPC • 2026 • 100 questions • 90 minutes • Answer key and solutions

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

**Q1.** Who among the following was NOT sentenced to death in the Kakori Conspiracy Case (1925)?

**(a)** Rajendra Lahiri
**(b)** Ashfaqulla Khan
**(c)** Sachindra Nath Bakshi
**(d)** Roshan Singh

**Q2.** What is the mode of the data given below? [Give your answer correct to 2 decimal places.]

| Age in years | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 |
|---|---|---|---|---|---|---|---|
| No. of patients | 31 | 29 | 33 | 28 | 39 | 10 | 18 |

**(a)** 62.75
**(b)** 61.75
**(c)** 65.75
**(d)** 64.75

**Q3.** The following table shows the heights of plants (in cm) and the corresponding number of plants. Find the mode of the data.

| Height (in cm) | 14 | 27 | 23 | 21 | 19 | 17 |
|---|---|---|---|---|---|---|
| Number of Plants | 1 | 3 | 6 | 12 | 7 | 5 |

**(a)** 24 cm
**(b)** 27 cm
**(c)** 21 cm
**(d)** 23 cm

**Q4.** Who was popularly known as the ‘Lion of Punjab’ during the Extremist phase?

**(a)** Bhagat Singh
**(b)** Bal Gangadhar Tilak
**(c)** Lala Lajpat Rai
**(d)** Rajguru

**Q5.** Article 23 specifically prohibits which practice?

**(a)** Compulsory service in the armed forces
**(b)** Conferring of titles
**(c)** Child employment in hazardous industries
**(d)** Trafficking in human beings

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**Q6.** What should come in place of '?' in the given series?

73 71 68 63 56 ?

**(a)** 44
**(b)** 46
**(c)** 45
**(d)** 43

**Q7.** The Digital India programme was launched in which year to enable digital delivery of services to citizens?

**(a)** 2020
**(b)** 2019
**(c)** 2015
**(d)** 2017

**Q8.** The National Small Industries Corporation was established in India in _____.

**(a)** 1954
**(b)** 1982
**(c)** 1955
**(d)** 1975

**Q9.** A solid cylinder is cut into 5 identical pieces by making cuts parallel to its flat surfaces. The curved surface area of all pieces is equal to the flat surface area of all pieces. If the total surface area of a piece is S square units, then the total surface area of the cylinder was ____ square units initially.

**(a)** 2S
**(b)** 3S
**(c)** 5S
**(d)** 4S

**Q10.** How many coins, each 5.5 cm in circumference and 2 mm thick, must be melted to form a cuboid of dimensions 14 cm × 11 cm × 8 cm? (Use π = 22/7)

**(a)** 2560
**(b)** 2370
**(c)** 2240
**(d)** 2480

**Q11.** If x = 7^(2/3) - 7^(-2/3), then the value of $x^3 + 3x$ is:

**(a)** 2400/49
**(b)** 800/49
**(c)** 790/343
**(d)** 2500/42

**Q12.** Three positive integers, a, b, c, satisfy: gcd (a, b) = 8, gcd (b, c) = 12, gcd (c, a) = 4 and LCM (a, b, c) = 240. Then, the minimum value of a + b + c is:

**(a)** 100
**(b)** 84
**(c)** 80
**(d)** 96

**Q13.** A typist takes 40 minutes to type 2 pages. How long (in minutes) will he take to type 84 pages?

**(a)** 1685
**(b)** 1680
**(c)** 1690
**(d)** 1670

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**Q14.** When was the Pradhan Mantri Janjatiya Unnat Gram Abhiyaan (PMJUGA) started?

**(a)** 2022
**(b)** 2025
**(c)** 2024
**(d)** 2023

**Q15.** Two taps can fill a cistern in 4 hours and 30 hours respectively. A third tap can empty it in 30 hours. How long (in hours) will it take to fill one-fourth of the empty cistern, if all of them are opened together?

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

**Q16.** In a certain code language,

M + K means ' M is the brother of K',

M % K means ' M is the mother of K',

M $ K means ' M is the father of K', and

M - K means ' M is the sister of K'.

Based on the above, how is C related to W if ' W % A $ C + J'?

**(a)** Brother
**(b)** Brother's son
**(c)** Son's son
**(d)** Son

**Q17.** Which of the following Acts granted Delhi, the National Capital Territory, a legislative assembly?

**(a)** Delhi Governance Act, 2001
**(b)** Delhi Administration Act, 1987
**(c)** Government of NCT of Delhi Act, 1991
**(d)** Union Territories Act, 1963

**Q18.** Seven people B, C, D, O, P, Q and R are sitting around a circular table facing the center of the table. Only four people sit between D and C when counted from the right of D. R sits third to the right of D. B sits third to the left of Q. P is an immediate neighbor of both C and R. How many people sit between O and P when counted from the left of O?

**(a)** One
**(b)** Two
**(c)** Three
**(d)** Four

**Q19.** The National Commission for Scheduled Tribes (NCST) was created by which Constitutional Amendment?

**(a)** 102nd Amendment
**(b)** 97th Amendment
**(c)** 65th Amendment
**(d)** 89th Amendment

**Q20.** Read the given statements and conclusions carefully. You have to take the given statements to be true even if they seem to be at variance from commonly known facts. You have to decide which conclusion/s logically follow/s from the given statements.

Statements: Some lakes are oceans. All planets are oceans. All lakes are roads.

Conclusion (I): Some oceans are roads.

Conclusion (II): Some planets are lakes.

**(a)** Only conclusion (II) follows
**(b)** Only conclusion (I) follows
**(c)** Both conclusions (I) and (II) follow

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**(d)** Neither conclusion (I) nor (II) follows

**Q21.** Govind gets double the amount in 7 years when invested at compound interest,compounded annually. In how many years will the amount become eight times itself?

**(a)** 21
**(b)** 56
**(c)** 14
**(d)** 28

**Q22.** What was the theme of the Emerging Science, Technology, and Innovation Conclave (ESTIC) held in November 2025?

**(a)** Imagine, Innovate, Inspire for Viksit Bharat 2047
**(b)** Science and Technology for Inclusive Growth
**(c)** Emerging Technologies for a Better Tomorrow
**(d)** Innovating for Sustainable Development

**Q23.** Which leader was a close associate of Mahatma Gandhi and carried out a salt protest in the Madras Presidency during the Civil Disobedience Movement?

**(a)** C. Rajagopalachari
**(b)** K. Kamaraj
**(c)** Sardar Vallabhbhai Patel
**(d)** Sarojini Naidu

**Q24.** Select the pair which follows the same pattern as that followed by the two set of pairs given below. Both pairs follow the same pattern.

RUB : WSG

BQL : GOQ

**(a)** BCG : GYL
**(b)** KDH : NZK
**(c)** MHV : OCX
**(d)** LMV : QKA

**Q25.** On which of the following days was World Wetlands Day observed in 2026, focusing on the theme “Wetlands and traditional knowledge: Celebrating cultural heritage”?

**(a)** February 1
**(b)** February 3
**(c)** February 2
**(d)** February 4

**Q26.** Which of the following nuclear power stations has the highest capacity (Megawatt electric) as of 2023?

**(a)** Narora Atomic Power Plant
**(b)** Kudankulam Atomic Power Plant
**(c)** Kakrapar Atomic Power Plant
**(d)** Tarapur Atomic Power Plant

**Q27.** Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

Some beds are pillows.

All pillows are towels.

All towels are cushions.

Conclusions:

(I) All cushions are pillows.

(II) Some towels are beds.

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**(a)** Both conclusions (I) and (II) follow
**(b)** Only conclusion (II) follows
**(c)** Only conclusion (I) follows
**(d)** Neither conclusion (I) nor (II) follows

**Q28.** Which of the following statements best describes the role of Self-Help Groups (SHGs) in India?

**(a)** They provide large-scale industrial loans to farmers
**(b)** They encourage thrift and extend micro-credit facilities to poor rural women
**(c)** They operate as regional offices of the Reserve Bank of India
**(d)** They function as government-owned cooperative banks

**Q29.** Based on the alphabetical order, three of the following four are alike in a certain way and thus form a group. Which is the one that does not belong to that group?

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

**(a)** PLO
**(b)** LHK
**(c)** JFH
**(d)** NJM

**Q30.** At UNEA-7, in December 2025, which initiative highlighted by India emphasizes individual and community action for environmental sustainability, contributing to SDG 12 (Responsible Consumption & Production) and SDG 13 (Climate Action)?

**(a)** Swachh Bharat Abhiyan
**(b)** Make in India
**(c)** Mission LiFE
**(d)** Digital India

**Q31.** What are the different forms of a gene called?

**(a)** Genotypes
**(b)** Phenotypes
**(c)** Chromosomes
**(d)** Alleles

**Q32.** Who among the following composed the work Rajashekharacharitra, which is a Prabandha dealing with the wars and loves of Rajashekhara, King of Avanti?

**(a)** Nachana Somanatha
**(b)** Krishnadevaraya
**(c)** Allasani Peddana
**(d)** Madayagari Mallana

**Q33.** Which of the following articles of the Indian Constitution deal with the Audit of accounts of the Panchayats and Municipalities?

**(a)** Article 243 J and Article 243 Z
**(b)** Article 243 I and Article 243 Y
**(c)** Article 243 M and Article 243 ZA
**(d)** Article 243 G and Article 243 ZB

**Q34.** 107 is related to 158 following a certain logic. Following the same logic, 122 is related to 173. To which of the following is 154 related, following the same logic?

(NOTE : Operations should be performed on the whole numbers, without breaking down the numbers into its constituent digits. E.g. 13 – Operations on 13 such as adding /subtracting /multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

**(a)** 213
**(b)** 218
**(c)** 198

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**(d)** 205

**Q35.** In an election between two candidates, 80% of the registered voters cast their votes and 3% of the votes polled were found invalid. Winning candidate got 52% of the valid votes and won the election by a margin of 291 votes. How many voters were registered?

**(a)** 9378
**(b)** 9373
**(c)** 9370
**(d)** 9375

**Q36.** In a certain code language, 'COOK' is coded as '8245' and 'HOOK' is coded as '5429'.

What is the code for 'H' in that language?

**(a)** 9
**(b)** 4
**(c)** 5
**(d)** 8

**Q37.** The ratio of the angles of a triangle is 2:3:4. What percentage of the total angle measure is the largest angle? (Round to the nearest integer)

**(a)** 44%
**(b)** 46%
**(c)** 42%
**(d)** 4%

**Q38.** In a circular race of length 1530 m, Shahrukh and Amir start simultaneously from the same point and run in the same direction. Shahrukh completes one round in 85 seconds, while Amir completes one round in 90 seconds. How many different meeting points are there on the circumference of the track?

**(a)** 35
**(b)** 11
**(c)** 2
**(d)** 1

**Q39.** Which city hosted the 7th Future Food Forum 2025 focused on food security and sustainability?

**(a)** Singapore
**(b)** Riyadh
**(c)** New Delhi
**(d)** Dubai

**Q40.** The sum of the interior angles of a regular polygon is 1620°. What is the difference (in degrees) between the measures of an interior angle and an exterior angle of the polygon?

**(a)** 1513/11
**(b)** 1825/11
**(c)** 2132/11
**(d)** 1146/11

**Q41.** The Harappan cities were famous for their _____.

**(a)** Wooden houses
**(b)** Stone palaces
**(c)** Irregular street patterns
**(d)** Grid system of town planning

**Q42.** Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair DOES NOT belong to that group?

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

**(a)** LK−IK
**(b)** ZY−XW

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**(c)** YX−WV
**(d)** RQ−PO

**Q43.** The selling price of 48 pieces of an item is same as the cost price of its x pieces. If the profit is 25%, then find the value of x.
**(a)** 60
**(b)** 40
**(c)** 70
**(d)** 50

**Q44.** Which of the following pollutants is most closely associated with the formation of acid rain?
**(a)** Ammonia
**(b)** Sulphur dioxide
**(c)** Ozone
**(d)** Methane

**Q45.** Which Indian government initiative has been introduced to support informal workers in urban areas?
**(a)** Jal Shakti Abhiyan
**(b)** PM Ujjwala Yojana
**(c)** PM-SVANidhi
**(d)** PM-KISAN

**Q46.** There are 12 members in group A, 55 members in group B and 89 members in group C. All the members of these groups went to a restaurant. The average amounts spent on each member of groups A, B and C are Rs. 160, Rs. 109 and Rs. 181, respectively. The overall average amount (in Rs. ) spent per member is:
**(a)** 157
**(b)** 151
**(c)** 153
**(d)** 154

**Q47.** The number of significant figures present in 0.00200 is _____.
**(a)** 6
**(b)** 3
**(c)** 4
**(d)** 5

**Q48.** Which of the given ratios is the greatest?
3 : 17, 13 : 67, 10 : 37 and 5 : 9
**(a)** 10 : 37
**(b)** 3 : 17
**(c)** 5 : 9
**(d)** 13 : 67

**Q49.** What property do solids possess due to their closely packed particles?
**(a)** Compressibility
**(b)** Rigidity
**(c)** Transparency
**(d)** Fluidity

**Q50.** Refer to the following letter and symbol series and answer the question that follows. Counting to be done from left to right only.
(Left) M K L $ F % G & # @ S ! S + ? K > H V G (Right)
If all the letters are dropped from the series, which of the following will be seventh from the right?
**(a)** #
**(b)** #ERROR!

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**(c)** &
**(d)** @

**Q51.** Evaluate: 16 + 20 ÷ 4 - 2 × 4
**(a)** 12
**(b)** 16
**(c)** 13
**(d)** 15

**Q52.** Which glacier, located in the Karakoram range, is the longest in this range and the second longest in the world outside the polar regions?
**(a)** Baltoro Glacier
**(b)** Gangotri Glacier
**(c)** Pindari Glacier
**(d)** Siachen Glacier

**Q53.** Under which section can we find the total processor utilization across all cores on a computer?
**(a)** My Computer
**(b)** Settings
**(c)** Task Manager
**(d)** Recycle Bin

**Q54.** X, Y, Z, S, T and U live on six different floors of the same building. The lowermost floor in the building is numbered 1, the floor above it, number 2 and so on till the topmost floor is numbered 6. Only two people live between T and Y. Only S lives above U. Z lives on an even numbered floor. T lives on the lowermost floor. How many people live between X and T?
**(a)** Four
**(b)** Two
**(c)** One
**(d)** Three

**Q55.** J, K, L, R, S and T live on six different floors of the same building. The lowermost floor in the building is numbered 1, the floor above it is numbered 2 and so on till the topmost floor is numbered 6. Only three people live between R and S, where R lives below S. J lives on an odd numbered floor and immediately above R. L lives on one of the floors below K and on one of the floors above T. Who lives on floor number 4?
**(a)** R
**(b)** J
**(c)** T
**(d)** L

**Q56.** What should come in place of '?' in the given series?
122 120 117 112 105 ?
**(a)** 93
**(b)** 92
**(c)** 94
**(d)** 95

**Q57.** The biography Sivam Subham: The Biography of a Couple, highlighted in October 2025 current-affairs notes, chronicles the life of which legendary couple?
**(a)** M.S. Subbulakshmi and T. Sadasivam
**(b)** Ravi Shankar and Annapurna Devi
**(c)** Kishore Kumar and Ruma Guha Thakurta
**(d)** Lata Mangeshkar and Hridaynath Mangeshkar

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**Q58.** The founder of the Chola empire, Vijayalaya, was the feudatory of which of the following South Indian powers?

**(a)** Gangas
**(b)** Vakatakas
**(c)** Chalukyas
**(d)** Pallavas

**Q59.** Which of the following letter-number clusters will replace the question mark "?" in the given series to make it logically complete?

YIV 11, VGU 15, SET 19, PCS 23, ?

**(a)** MAR 27
**(b)** MYN 25
**(c)** MZP 27
**(d)** NAQ 29

**Q60.** What is the maximum value that must be assigned to A so that the 8-digit number 230A7807 is divisible by 3?

**(a)** 5
**(b)** 4
**(c)** 9
**(d)** 7

**Q61.** A quadratic polynomial f(x) gives a remainder of 5 when divided by (x - 2), and of -3 when divided by (x - 4). If f(x) is of the form $ax^2 + bx + c$ and the leading coefficient is 1, then which of the following is the correct quadratic equation f(x)=0?

**(a)** $x^2-6x+11=0$
**(b)** $x^2-8x+13=0$
**(c)** $x^2-10x+21=0$
**(d)** $x^2-9x+20=0$

**Q62.** The ratio of the lengths of two corresponding sides of two similar triangles is 16 : 14. The ratio of the areas of these two triangles, in the order mentioned, is:

**(a)** 257 : 197
**(b)** 16√ 16 : 14
**(c)** 256 : 196
**(d)** 16 : 14

**Q63.** In December 2025, which institution's scientists created the bioluminescent CRISPR protein 'GlowCas9' that can track gene editing?

**(a)** TIFR, Mumbai
**(b)** Bose Institute, Kolkata
**(c)** IISc, Bangalore
**(d)** IIT, Delhi

**Q64.** What contributed to the height of the Citadel in the Harappan civilisation?

**(a)** Stone construction
**(b)** Mud brick platforms
**(c)** Wooden pillars
**(d)** Adobe walls

**Q65.** Ansh walks to his school at a certain speed from his home in the morning and returns in the afternoon at a speed, which is 2 km/h slower than his speed in the morning. If the average speed of Ansh of going to and coming back from the school is 4.8 km/h, find the sum of the speeds (in km/h) of Ansh in the morning and afternoon.

**(a)** 8
**(b)** 10
**(c)** 11
**(d)** 9

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**Q66.** Three friends X, Y and Z started a business by investing a sum of money in the ratio of 9 : 4 : 8. After 6 months, X withdraws half of his capital. If the sum invested by Z is Rs. 23,000, then out of a total annual profit of Rs. 33,000, what is the difference between X's and Y's profit?

**(a)** Rs. 3880
**(b)** Rs. 4660
**(c)** Rs. 5845
**(d)** Rs. 4840

**Q67.** Which of the following letter-clusters should replace # and % so that the pattern and relationship followed between the letter-cluster pair on the left side of :: is the same as that on the right side of :: ?

: PZH :: MWE : %

**(a)** = FPX % = WGP
**(b)** = FPX % = WHO
**(c)** = FPX % = WGO
**(d)** = YPX % = WGO

**Q68.** Dinesh starts from Point A and drives 46 km towards West. He then takes a left turn, drives 25 km, turns left and drives 35 km. He then takes a left turn and drives 67 km. He takes a final right turn, drives 11 km and stops at Point P. How far (shortest distance) and towards which direction should he drive in order to reach Point A again? (All turns are 90 degrees turns only unless specified)

**(a)** 40 km to the North
**(b)** 42 km to the North
**(c)** 40 km to the South
**(d)** 42 km to the South

**Q69.** A, B, C, D, E, F and G sit around a circular table, facing the centre.

Only two people sit between G and F when counted from the right of G. Only three people sit between D and E when counted from the right of E. F sits to the immediate right of E. A sits to the immediate right of B.

How many people sit between B and G when counted from the left of G?

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

**Q70.** Which forest type in India is known for its year-round green canopy due to no fixed period of leaf shedding?

**(a)** Tropical evergreen forests
**(b)** Tropical thorn forests
**(c)** Montane pine forests
**(d)** Dry deciduous forests

**Q71.** X, Y, Z, S, T and U live on six different floors of the same building. The lowermost floor in the building is numbered 1, the floor above it is numbered 2, and so on till the topmost floor is numbered 6. U lives on floor number 4. Only two people live between U and Z. Only T lives between U and Y. X lives immediately below U. Who lives on floor number 5?

**(a)** T
**(b)** Y
**(c)** X
**(d)** S

**Q72.** Which characteristic of a computer ensures that identical input and instructions always produce the same output?

**(a)** Mobility
**(b)** Expansion
**(c)** Consistency
**(d)** Flexibility

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**Q73.** At what rate per annum will a sum of money become four times itself in 25 years under simple interest?

**(a)** 10%
**(b)** 14%
**(c)** 12%
**(d)** 24%

**Q74.** In a certain code language,

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

A – B means 'A is the brother of B'

A × B means 'A is the wife of B'

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

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

Based on the above, how is G related to D if 'G # P – L # C + D'?

**(a)** Son's daughter
**(b)** Father's mother
**(c)** Father's sister
**(d)** Brother's daughter

**Q75.** In a certain code language, 'OMIT' is coded as '4295' and 'TIME' is coded as '2458'. What is the code for 'E' in the given code language?

**(a)** 2
**(b)** 8
**(c)** 4
**(d)** 5

**Q76.** Solve the given equations for (x, y, z):

$x + y + z = 2$

$6x - 4y + 5z = 31$

$5x + 2y + 2z = 13$

**(a)** (3, −2, 1)
**(b)** (-3, −2, 1)
**(c)** (3, −2, −1)
**(d)** (3, 2, 1)

**Q77.** What will come in the place of '?' in the following equation, if '+' and '−' are interchanged and '×' and '÷' are interchanged?

$25 \div 2 + 12 \times 4 - 7 = ? + 13$

**(a)** 64
**(b)** 66
**(c)** 67
**(d)** 65

**Q78.** Which of the following rulers of the Gurjara-Pratihara dynasty is credited with resisting Arab invasions effectively?

**(a)** Ramabhadra
**(b)** Nagabhata I
**(c)** Mihira Bhoja
**(d)** Yasovarman I

**Q79.** Who among the following received the Padma Vibhushan award for his contribution to Indian classical dance?

**(a)** Mallika Sarabhai
**(b)** Geeta Chandran
**(c)** Shovana Narayan
**(d)** Birju Maharaj

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**Q80.** 51 is related to 253 following a certain logic. Following the same logic, 38 is related to 188. To which of the following is 32 related, following the same logic?

(NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into their constituent digits. E.g. 13 – Operations on 13 such as adding /subtracting /multiplying, etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

**(a)** 154
**(b)** 152
**(c)** 158
**(d)** 156

**Q81.** In a right-angled triangle ABC, angle C=90°, angle A=45°, and the length of the adjacent side to angle A (side AC) is 7 units. Determine the length of the side AB (the hypotenuse).

**(a)** 14 units
**(b)** 7√2 units
**(c)** 14√2 units
**(d)** 7 units

**Q82.** In this question, a question is followed by two statements numbered (I) and (II). You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and decide the appropriate answer.

Q. Arjun, Kunal, Mohit, Prateek, and Saurav, each have different height. Who is the tallest?

(I) Mohit is taller than Arjun and Kunal but shorter than Prateek.

(II) Saurav is taller than Mohit but shorter than Prateek.

**(a)** Both statements I and II together are NOT sufficient to answer the question
**(b)** Data in Statement II alone is sufficient to answer the question while data in Statement I is not
**(c)** Both statements I and II together (and not statement I alone or statement II alone) are sufficient to answer the question
**(d)** Data in Statement I alone is sufficient to answer the question while data in Statement II is not

**Q83.** In which year was the 52nd Amendment Act of the Indian Constitution, which introduced the Anti-Defection Law to prevent elected representatives from switching political parties, passed?

**(a)** 1990
**(b)** 1975
**(c)** 1980
**(d)** 1985

**Q84.** Which of the following letter-clusters should replace # and % so that the pattern and relationship followed between the letter-cluster pair on the left side of :: is the same as that on the right side of :: ?

: JOP :: YDE : %

**(a)** = OTL % = TPZ
**(b)** = TOU % = TZY
**(c)** = OTT % = TTZ
**(d)** = OTU % = TYZ

**Q85.** Refer to the given letter, number, symbol series and answer the question that follows. Counting to be done from left to right. All numbers are single-digit numbers.

(Left) W 5 $ D % 9 R Q 2 8 @ F # 6 P 3 V & L 4 K ^ U (Right)

How many such symbols are there, each of which is immediately preceded by a letter and also immediately followed by a number?

**(a)** Two
**(b)** Three
**(c)** None
**(d)** One

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**Q86.** By selling an article at 3/11 of its marked price, Hitesh incurs a loss of 15%. If he sells it at 54% of its marked price, then the profit percentage is

**(a)** 67.4%
**(b)** 69.5%
**(c)** 68.3%
**(d)** 67.2%

**Q87.** If (x+y) : (y+z) : (z+x) = 6 : 7 : 8 and x + y + z = 14, then find the value of z.

**(a)** 8
**(b)** 5
**(c)** 7
**(d)** 6

**Q88.** Refer to the following letter, number and symbol series and answer the question. (All numbers are single digit numbers only)

(Left) E % Y & T 2 K 4 # 5 C * 6 S D $ 3 7 R @ G (Right)

If all the numbers are dropped from the series, which of the following will be seventh from the right?

**(a)** S
**(b)** C
**(c)** *
**(d)** K

**Q89.** Which city hosted the signing of the first universal legal framework to combat the escalating threat of cybercrime worldwide, when 72 nations signed the United Nations Convention against Cybercrime?

**(a)** Vienna
**(b)** Hanoi
**(c)** Geneva
**(d)** New York

**Q90.** A computer performs millions of calculations in a fraction of a second. Which characteristic is primarily demonstrated here?

**(a)** Accuracy
**(b)** Speed
**(c)** Versatility
**(d)** Storage

**Q91.** A shopkeeper fixes the marked price of an item 136% above its cost price. What percentage of discount on marked price should be allowed to gain 18%?

**(a)** 48%
**(b)** 51%
**(c)** 47%
**(d)** 50%

**Q92.** The marks obtained by a student in five subjects are: 72, 68, 74, 70, and 76. What is the average marks of the student per subject?

**(a)** 75
**(b)** 72
**(c)** 70
**(d)** 74

**Q93.** Which event recognized authors such as Rabih Alameddine and Omar El Akkad with top honours in 2025?

**(a)** National Book Awards
**(b)** Commonwealth Writers' Prize
**(c)** Pulitzer Prize
**(d)** Booker Prize

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**Q94.** The impeachment of President due to violation of the the Constitution is preferred by _____.

**(a)** Only Speaker of Lok Sabha
**(b)** Only Lok Sabha
**(c)** Only Rajya Sabha
**(d)** Either House of the Parliament

**Q95.** Each of the digits in the number 7814329 is arranged in ascending order from left to right. The position of how many digits will remain unchanged as compared to that in the original number?

**(a)** Three
**(b)** Four
**(c)** One
**(d)** Two

**Q96.** What is the purpose of Pressing ALT + F4 in Windows operating system?

**(a)** Close the current window or application
**(b)** Switch tabs
**(c)** Delete selected text
**(d)** Open the Find dialog

**Q97.** The sum of the cubes of the numbers 55, –30 and –25 is equal to:

**(a)** 132750
**(b)** 123750
**(c)** 132570
**(d)** 123570

**Q98.** When the kidneys are not able to reabsorb the glucose, then the glucose will be excreted through the urine. This condition is known as:

**(a)** Ascites
**(b)** Lupus nephritis
**(c)** Cystinosis
**(d)** Glycosuria

**Q99.** Which of the given letter-number clusters will replace the question mark (?) in the following series to make it logically complete?

HKS 13 NQY18 TWE 23 ZCK 28 ?

**(a)** BSO 35
**(b)** FIQ 33
**(c)** KSR 38
**(d)** LFT 36

**Q100.** Select the set in which the numbers are related in the same way as are the numbers of the following sets.

(NOTE : Operations should be performed on the whole numbers, without breaking down the numbers into their constituent digits. E.g. 13 – Operations on 13 such as adding / subtracting / multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

(34, 1088, 16)

(21, 420, 10)

**(a)** (23, 513, 11)
**(b)** (4, 79, 9)
**(c)** (28, 224, 4)
**(d)** (8, 279, 17)

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## ANSWER KEY

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

## SOLUTIONS

**Q1. Answer: (c) Sachindra Nath Bakshi**

The correct answer is Sachindra Nath Bakshi.

Key Points

• The Kakori Conspiracy Case, also known as the Kakori Train Robbery, took place on 9 August 1925, in a small village called Kakori near Lucknow, Uttar Pradesh.

• Rajendra Lahiri was a prominent member of the Hindustan Republican Association (HRA). He was found guilty of participating in the robbery and was awarded the death sentence. He was hanged in Gonda Jail on 17 December 1927, two days before the scheduled date. Statement 1 is incorrect as he was sentenced to death.

• Ashfaqulla Khan was a key strategist and the first Muslim to be hanged in a conspiracy case against the British Raj. He was sentenced to a death sentence and was executed on 19 December 1927, in Faizabad Jail. Statement 2 is incorrect as he was sentenced to death.

• Sachindra Nath Bakshi was a revolutionary and a member of the HRA who participated in the robbery. Unlike his comrades, he was not sentenced to death; instead, he was awarded life imprisonment (transportation for life) and sent to the Cellular Jail in the Andaman and Nicobar Islands. Statement 3 is correct.

• Roshan Singh (Thakur Roshan Singh) was another revolutionary involved in the conspiracy. Although he was not directly involved in the train robbery itself but was associated with the Bamrauli action, he was convicted and given a death sentence. He was hanged in Naini Allahabad Jail on 19 December 1927. Statement 4 is incorrect as he was sentenced to death.

Additional Information

• Hindustan Republican Association (HRA):

• The HRA was a revolutionary organization established in October 1924 in Kanpur.

• The founding members included Sachindra Nath Sanyal, Ram Prasad Bismil, and Jogesh Chandra Chatterjee.

• The objective of the association was to establish a Federal Republic of United States of India through an armed revolution.

• The Kakori Train Robbery was planned to acquire funds from the British Treasury to purchase weapons and support the organization's activities.

• Ram Prasad Bismil:

• He was the primary leader and mastermind behind the Kakori robbery.

• He was a gifted poet who wrote under the pen names Bismil, Ram, and Agyat.

• He was awarded the death sentence and hanged on 19 December 1927, in Gorakhpur Jail.

• Evolution to HSRA:

• After the crackdown following the Kakori incident, the organization was reorganized as the Hindustan Socialist Republican Association (HSRA) in 1928 at Feroz Shah Kotla, Delhi.

• Leaders like Chandrashekhar Azad, Bhagat Singh, and Sukhdev played pivotal roles in this transition towards Socialist ideologies.

Important Points

• Chandrashekhar Azad was the only major leader involved in the Kakori Conspiracy who successfully evaded arrest by the British police. He continued the revolutionary struggle until his death in Alfred Park, Allahabad in February 1931.

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• The British Government arrested approximately 40 revolutionaries from various cities across India for their alleged involvement in the conspiracy.

• The legal defense for the revolutionaries was led by prominent figures such as Govind Ballabh Pant and Chandra Bhanu Gupta, although the Special Magistrate's Court ultimately handed down severe punishments to suppress the uprising.

• Sachindra Nath Bakshi survived his imprisonment and was released in 1937 after the formation of the Congress governments in provinces. He later participated in the Quit India Movement in 1942.

**Q2. Answer: (a) 62.75**

Shortcut Trick

=> Highest frequency = 39 => Modal class = 60–70

=> l = 60, h = 10

=> f1 = 39, f0 = 28, f2 = 10

=> Mode = l + [(f1 − f0)/(2f1 − f0 − f2)] × h

=> = 60 + [(39−28)/(78 − 28 − 10)] × 10

=> = 60 + (11/40) × 10

=> = 60 + 2.75 = 62.75

Therefore Answer = 62.75

Alternate Method

Given:

Class intervals: 20–30, 30–40, 40–50, 50–60, 60–70, 70–80, 80–90

Frequencies: 31, 29, 33, 28, 39, 10, 18

Formula:

Mode = l + [(f1 − f0)/(2f1 − f0 − f2)] × h

Calculation:

=> Modal class = 60–70 (highest frequency = 39)

=> l = 60, h = 10

=> f1 = 39, f0 = 28, f2 = 10

=> Mode = 60 + [(39 − 28)/(78 − 28 − 10)] × 10

=> = 60 + (11/40) × 10

=> = 60 + 2.75 = 62.75

Final Answer: 62.75

Additional Information

1. Modal Class: Highest frequency class

2. Formula Use: For grouped data

3. Terms: f1 (modal), f0 (previous), f2 (next)

4. Class Width: h = 10

**Q3. Answer: (c) 21 cm**

Shortcut Trick

=> Mode = value with highest frequency

=> Highest frequency = 12

=> Corresponding height = 21 cm

Therefore Answer = 21 cm

Alternate Method

Given:

Heights: 14, 27, 23, 21, 19, 17

Frequencies: 1, 3, 6, 12, 7, 5

Formula:

Mode = Observation with highest frequency

Calculation:

=> Compare frequencies: 1, 3, 6, 12, 7, 5

=> Maximum frequency = 12

=> Corresponding height = 21 cm

Final Answer: 21 cm

Additional Information

1. Mode: Most frequently occurring value in data
2. Discrete Data: Mode is directly identified from frequency
3. Grouped Data: Mode calculated using formula
4. Use Case: Helps identify most common observation

**Q4. Answer: (c) Lala Lajpat Rai**

The correct answer is Lala Lajpat Rai.

Key Points

• Lala Lajpat Rai was a prominent Indian nationalist leader who played a pivotal role in the Indian Independence Movement. He was popularly known as Punjab Kesari or the 'Lion of Punjab' due to his fierce advocacy for self-rule.

• He was a key member of the Extremist faction of the Indian National Congress, famously known as the Lal-Bal-Pal trio, which included Lala Lajpat Rai, Bal Gangadhar Tilak, and Bipin Chandra Pal.

• In 1894, he was instrumental in the founding of the Punjab National Bank (PNB), which was the first Swadeshi bank in India, and the Lakshmi Insurance Company.

• He led a non-violent protest against the Simon Commission in Lahore on 30 October 1928. During this protest, he was severely injured in a lathi charge ordered by the local police superintendent, James A. Scott.

• Following the injuries sustained during the protest, he passed away on 17 November 1928. His death sparked a wave of revolutionary activities among the youth of India, leading to the Saunders' murder case involving Bhagat Singh and his associates.

Additional Information

• Bhagat Singh:

• Commonly known as Shaheed-e-Azam, he was a charismatic Indian revolutionary who played a crucial role in the movement for independence.

• He founded the Naujawan Bharat Sabha in March 1926 and was a leading member of the Hindustan Socialist Republican Association (HSRA).

• He, along with Batukeshwar Dutt, threw non-lethal bombs into the Central Legislative Assembly in April 1929 to protest against the Public Safety Bill and the Trade Dispute Bill.

• He was executed on 23 March 1931 at the age of 23 in Lahore Jail.

• Bal Gangadhar Tilak:

• Known as Lokmanya (accepted by the people) and the 'Father of Indian Unrest' by British colonial authorities.

• He was a founding member of the All India Home Rule League established in 1916 alongside Annie Besant.

• He popularized the slogan, "Swaraj is my birthright and I shall have it!" and published influential newspapers such as Kesari (in Marathi) and The Mahratta (in English).

• Rajguru (Shivaram Hari Rajguru):

• A brave revolutionary from Maharashtra, he was a member of the HSRA and a close associate of Bhagat Singh and Sukhdev.

• He participated in the assassination of John P. Saunders in 1928 to avenge the death of Lala Lajpat Rai.

• He was hanged on 23 March 1931, and his sacrifice is commemorated annually as Shaheed Diwas (Martyrs' Day).

Important Points

• Literary Contributions: Lala Lajpat Rai was a prolific writer. His famous works include 'Unhappy India', 'The Political Future of India', and 'England's Debt to India'. He also founded the Servants of the People Society in 1921.

• Religious and Social Work: He was deeply influenced by Swami Dayananda Saraswati and was a prominent leader of the Arya Samaj movement in Punjab.

• Role in Congress: He presided over the Special Session of the Indian National Congress in Calcutta in 1920, where the Non-Cooperation Movement resolution was passed.

• Legacy: To honor his legacy, Lala Lajpat Rai University of Veterinary and Animal Sciences was established in Hisar, Haryana, and his birthday on 28 January is celebrated in various parts of India.

**Q5. Answer: (d) Trafficking in human beings**

The correct answer is Trafficking in human beings.

Key Points

• Article 23 of the Constitution of India is a significant provision that prohibits trafficking in human beings, begar, and other similar forms of forced labour.

• Statement 1: Compulsory service in the armed forces is not prohibited; rather, Article 23(2) allows the State to impose compulsory service for public purposes, such as military or social service, provided there is no discrimination based on religion,

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race, caste, or class. Hence, statement 1 is incorrect.

• Statement 2: The conferring of titles (except military and academic) is prohibited and regulated under Article 18 of the Indian Constitution to ensure social equality. Hence, statement 2 is incorrect.

• Statement 3: The prohibition of child employment in factories, mines, or any hazardous industries is specifically covered under Article 24 for children below the age of 14 years. Hence, statement 3 is incorrect.

• Statement 4: Trafficking in human beings and forced labour are explicitly prohibited under Article 23(1), and any violation is considered an offence punishable under the law. Hence, statement 4 is correct.

• The Right Against Exploitation is enshrined in Articles 23 and 24 to protect the dignity of the individual and prevent exploitation by the State or private persons.

Additional Information

• Legislative Actions: To implement the mandate of Article 23, the Parliament of India has enacted several laws, including the Immoral Traffic (Prevention) Act, 1956 and the Bonded Labour System (Abolition) Act, 1976.

• Scope of Article 23: This Fundamental Right is available to both citizens and foreigners, and it acts as a safeguard against exploitation by both State authorities and private individuals.

• Definition of Begar: The term 'Begar' specifically means involuntary work without payment or remuneration, which was traditionally practiced in India under the zamindari system.

• Human Trafficking: This involves the illegal trade of humans for sexual slavery, forced labour, or commercial sexual exploitation, which is strictly prohibited under the Constitution.

• The 44th Amendment Act: While Fundamental Rights can be suspended during an Emergency, the Right Against Exploitation remains a crucial pillar of Indian democracy.

Important Points

• Article 35: Under this Article, the Parliament has the exclusive power to make laws to prescribe punishment for those acts declared as offences under Article 23.

• Article 23(2) Exception: The State can require compulsory service (like conscription) for national security or social service, but it cannot discriminate between citizens on religious or racial grounds while doing so.

• Forced Labour: The Supreme Court of India has interpreted 'forced labour' broadly to include labor arising from economic circumstances where a person is forced to work for less than minimum wages.

• International Context: Article 23 aligns with international standards like the Universal Declaration of Human Rights (UDHR) and International Labour Organization (ILO) conventions against forced labour.

**Q6. Answer: (c) 45**

The logic followed here is:

thus, "45" will replace the question mark in the given series.

Hence, the correct option is "Option 3".

**Q7. Answer: (c) 2015**

The correct answer is 2015.

Key Points

• The Digital India programme was officially launched on July 1, 2015, by Prime Minister Narendra Modi. The initiative was designed to transform India into a digitally empowered society and a knowledge economy.

• It is an ambitious umbrella programme that covers multiple Government Ministries and Departments. It weaves together a large number of ideas and thoughts into a single, comprehensive vision so that each of them can be implemented as part of a larger goal.

• The Ministry of Electronics and Information Technology (MeitY) is the nodal agency responsible for the overall coordination and implementation of this flagship scheme.

• The motto of the programme is "Power To Empower," focusing on three key vision areas: Digital Infrastructure as a Core Utility to Every Citizen, Governance and Services on Demand, and Digital Empowerment of Citizens.

• The programme aims to provide high-speed internet connectivity to all Gram Panchayats and ensure that government services are available to citizens electronically, thereby improving efficiency and transparency.

Additional Information

• The Digital India initiative is centered on 9 Pillars of growth, which include:

• Broadband Highways: To cover all 2.5 lakh Gram Panchayats under the National Optical Fibre Network (NOFN).

• Universal Access to Mobile Connectivity: To ensure mobile coverage in the remaining uncovered villages in the country.

• Public Internet Access Programme: Strengthening Common Service Centres (CSCs) and transforming post offices into multi-service centers.

• e-Governance: Reforming government through technology by simplifying forms and tracking applications online.

• e-Kranti: Electronic delivery of services such as e-Education, e-Healthcare, and e-Justice.

• Information for All: Hosting data on Open Data platforms to facilitate transparency and accessibility for the public.

• Electronics Manufacturing: Aiming for Net Zero Imports in electronics by the year 2020 through domestic production.

• IT for Jobs: Training youth in smaller towns and villages for IT sector jobs and BPO operations.

• Early Harvest Programmes: Implementation of quick-result projects like Biometric Attendance and Wi-Fi in All Universities.

Important Points

• DigiLocker: A key initiative under the programme launched in 2015 to provide a secure cloud-based platform for storage, sharing, and verification of documents and certificates.

• BHIM (Bharat Interface for Money): Launched in December 2016, it is a mobile payment app based on Unified Payments Interface (UPI) that facilitated the digital payment revolution in India.

• UMANG (Unified Mobile Application for New-age Governance): A single mobile app that provides access to over 1,200 central and state government services, supporting the goal of mobile governance.

• Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA): One of the world's largest digital literacy programmes, aimed at making 6 crore rural households digitally literate.

• Impact and Data: As of recent reports, India has seen a massive surge in internet subscribers, exceeding 800 million, and has become the global leader in real-time digital transactions, accounting for nearly 46% of global digital payments in 2022.

**Q8. Answer: (c) 1955**

The correct answer is 1955.

Key Points

• The National Small Industries Corporation (NSIC) was established in the year 1955 as a Government of India enterprise. Hence, the year 1955 is the correct answer.

• It functions under the administrative control of the Ministry of Micro, Small and Medium Enterprises (MSME). It was created to promote, aid, and foster the growth of small industries in the country.

• In 1955, the corporation started with the primary objective of facilitating the procurement of government orders for small-scale units and providing them with machinery on a hire-purchase basis.

• The NSIC acts as a nodal agency to implement various schemes of the Ministry of MSME, focusing on Marketing, Technology, and Finance support services for small enterprises.

• The establishment of NSIC in 1955 marked a significant step in India's industrial policy to encourage entrepreneurship and employment generation through the small-scale sector.

Additional Information

• Marketing Support: NSIC helps MSMEs through the Single Point Registration Scheme (SPRS), which allows small units to participate in Government Stores Purchase Programmes without paying earnest money deposits.

• Financial Assistance: It provides Raw Material Assistance by financing the purchase of raw materials (both indigenous and imported) and also has tie-ups with commercial banks to facilitate working capital for small units.

• Technology Support: The corporation manages several NSIC Technical Services Centres (NTSCs) across India (e.g., in New Delhi, Rajkot, Ludhiana, and Howrah) to provide technical training and common facility support.

• Exhibition and Trade Fairs: To provide international and domestic exposure, NSIC organizes and participates in various Trade Fairs and Exhibitions, helping MSMEs showcase their products to a global audience.

• B2B Portal: NSIC manages a specialized B2B Web Portal (MSMEMart) to facilitate e-commerce and marketing linkages for small-scale industries in the digital era.

Important Points

• Headquarters: The NSIC is headquartered in Okhla, New Delhi.

• Mini Ratna Status: The corporation has been recognized with the Mini Ratna Category-II status, reflecting its financial performance and operational efficiency as a Public Sector Undertaking (PSU).

• International Cooperation: NSIC has shared the Indian experience of Small Business Development with many developing nations in Africa and Asia, helping them set up similar institutional frameworks.

• ISO Certification: It is an ISO 9001:2015 certified company, ensuring that its service delivery and management systems meet international standards.

• Other Options Context: While 1954 saw the establishment of the Small Industries Development Organization (SIDO), NSIC was specifically incorporated in 1955. 1982 is notable for the establishment of NABARD and EXIM Bank, and 1975 marked the beginning of Regional Rural Banks (RRBs).

**Q9. Answer: (b) 3S**

Shortcut Trick

=> Let original CSA = $2\pi rh$ and TSA = $2\pi rh + 2\pi r^2$

=> After cutting into 5 parts → CSA unchanged, flat surfaces increase
=> Given: total CSA = total flat area => $2\pi rh = 10\pi r^2$
=> => $h = 5r$
=> Each piece TSA = S = $(2\pi r \cdot h/5 + 2\pi r^2) = (2\pi r^2 + 2\pi r^2) = 4\pi r^2$
=> Original TSA = $2\pi r \cdot 5r + 2\pi r^2 = 12\pi r^2 = 3S$
Therefore Answer = 3S
Alternate Method
Given:
Cylinder cut into 5 equal parts
CSA (all pieces) = Flat surface area (all pieces)
Formula:
CSA = $2\pi rh$
Flat area after cut = top + bottom + cuts = $2\pi r^2 + 8\pi r^2 = 10\pi r^2$
Calculation:
=> $2\pi rh = 10\pi r^2$
=> $h = 5r$
=> TSA of one piece = curved + top + bottom
=> = $2\pi r(h/5) + 2\pi r^2$
=> = $2\pi r(r) + 2\pi r^2 = 4\pi r^2 = S$
=> Original TSA = $2\pi rh + 2\pi r^2$
=> = $2\pi r(5r) + 2\pi r^2 = 12\pi r^2$
=> = 3S
Final Answer: 3S
Additional Information
1. Cylinder CSA: $2\pi rh$
2. Cylinder TSA: $2\pi rh + 2\pi r^2$
3. Cutting Effect: New flat surfaces increase, CSA unchanged
4. Key Insight: Use equality condition to find relation between r and h

**Q10. Answer: (a) 2560**

Shortcut Trick
=> Circumference = $2\pi r = 5.5$ => $r = 5.5 \times 7 / (2\times22) = 0.875$ cm
=> Thickness = 2 mm = 0.2 cm
=> Volume of coin = $\pi r^2 h = (22/7)\times(0.875)^2\times0.2 \approx 0.48125$ cm³
=> Volume of cuboid = $14\times11\times8 = 1232$ cm³
=> Number = $1232 / 0.48125 \approx 2560$
Therefore Answer = 2560
Alternate Method
Given:
Circumference = 5.5 cm
Thickness = 2 mm = 0.2 cm
Cuboid dimensions = 14, 11, 8 cm
Formula:
Volume of cylinder = $\pi r^2 h$
Volume of cuboid = $l\times b\times h$
Coin Cuboid
Calculation:
=> $2\pi r = 5.5$ => $r = (5.5\times7)/(44) = 0.875$ cm
=> Volume of one coin = $(22/7)\times(0.875)^2\times0.2 \approx 0.48125$ cm³
=> Volume of cuboid = $14\times11\times8 = 1232$ cm³
=> Number of coins = $1232 / 0.48125 \approx 2560$
Final Answer: 2560

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Additional Information

1. Circumference: 2πr
2. Unit Conversion: 1 cm = 10 mm
3. Volume Conservation: Total volume remains same after melting
4. Cylinder Concept: Coin treated as small cylinder

**Q11. Answer: (a) 2400/49**

Shortcut Trick

=> Let a = 7^(2/3), b = 7^(-2/3)

=> x = a − b

=> Use identity: $(a - b)^3 + 3(a - b) = a^3 - b^3$

=> = $7^2$ − 7^(-2) = 49 − 1/49

Therefore Answer = 2400/49

Alternate Method

Given:

x = 7^(2/3) − 7^(-2/3)

Formula:

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

Calculation:

=> Let a = 7^(2/3), b = 7^(-2/3)

=> x = a − b

=> $x^3 = a^3 - b^3 - 3ab(a - b)$

=> $x^3 = a^3 - b^3 - 3abx$

=> $x^3 + 3x = a^3 - b^3 - 3abx + 3x$

=> Since ab = 1 => −3abx + 3x = 0

=> $x^3 + 3x = a^3 - b^3$

=> = $7^2$ − 7^(-2) = 49 − 1/49

=> = (2401 − 1)/49 = 2400/49

Final Answer: 2400/49

Additional Information

1. Exponent Rule: a^m × a^(-m) = 1
2. Identity: $(a - b)^3 + 3(a - b) = a^3 - b^3$ if ab = 1
3. Negative Power: a^(-n) = $1/a^n$
4. Simplification Tip: Convert powers to simple base before solving

**Q12. Answer: (a) 100**

Shortcut Trick

Prime factorize LCM 240 = 2^4 × $3^1$ × $5^1$.

Exponents for 2: gcd(a,b)=$2^3$, gcd(b,c)=$2^2$, gcd(c,a)=$2^2$, LCM=2^4 → powers are {4, 3, 2}.

Exponents for 3: gcd(b,c)=$3^1$, gcd(a,b)=3^0, gcd(c,a)=3^0, LCM=$3^1$ → a has 3^0, b and c have $3^1$.

Exponents for 5: Only one number can have $5^1$ (as all gcd pairs lack 5).

Test case 1: a = $2^3$×5, b = 2^4×3, c = $2^2$×3 → 40 + 48 + 12 = 100.

Test case 2: a = 2^4, b = $2^3$×3, c = $2^2$×3×5 → 16 + 24 + 60 = 100.

Therefore Answer = 100

Alternate Method

Given:

gcd(a, b) = 8, gcd(b, c) = 12, gcd(c, a) = 4, LCM(a, b, c) = 240

Formula used:

gcd(x, y) = Product of common prime factors with lowest powers.

LCM(x, y, z) = Product of all prime factors with highest powers.

a=40 b=48 c=12 gcd=8 gcd=4 gcd=12 LCM (a, b, c) = 240 Min Sum = 40+48+12 = 100

Calculations:

Let a = 2^(a1) × 3^(a2) × 5^(a3), b = 2^(b1) × 3^(b2) × 5^(b3), c = 2^(c1) × 3^(c2) × 5^(c3).

=> For prime 2: min(a1, b1)=3, min(b1, c1)=2, min(c1, a1)=2, max(a1, b1, c1)=4. This gives c1=2 and {a1, b1}={3, 4}.

=> For prime 3: min(a2, b2)=0, min(b2, c2)=1, min(c2, a2)=0, max(a2, b2, c2)=1. This gives a2=0, b2=1, c2=1.

=> For prime 5: min(a3,b3)=0, min(b3,c3)=0, min(c3,a3)=0, max(a3,b3,c3)=1. One of them is 1, others 0.

=> Case 1 (a3=1): a = $2^3 \times 5 = 40$, b = 2^4×3=48, c = $2^2 \times 3 = 12$. Sum = 40+48+12 = 100.

=> Case 2 (c3=1): a = 2^4=16, b = $2^3 \times 3 = 24$, c = $2^2 \times 3 \times 5 = 60$. Sum = 16+24+60 = 100.

Therefore The correct answer is 100.

Additional Information

LCM and GCD Property

For two numbers x and y, LCM(x, y) × GCD(x, y) = x × y. This does not directly apply to three numbers.

Prime Exponent Rule

The exponent of a prime p in GCD is the minimum of its exponents in the numbers, while in LCM, it is the maximum.

Coprime Numbers

If gcd(a, b) = 1, then a and b are called coprime or relatively prime numbers.

**Q13. Answer: (b) 1680**

Shortcut Trick

2 pages => 40 min

=> 1 page => 20 min

=> 84 pages => 84 × 20

=> = 1680 min

Therefore Answer = 1680 minutes

Alternate Method

Given:

2 pages = 40 minutes

Formula:

Time prop. to Pages

Calculations:

=> Time for 1 page = 40 ÷ 2 = 20 min

=> Time for 84 pages = 84 × 20 = 1680 min

Therefore Required time = 1680 minutes

Additional Information

Direct Proportion: Time increases directly with work if speed is constant

Unitary Method: Find value of 1 unit, then multiply

Rate Concept: Pages per minute = Work ÷ Time

Shortcut Tip: Always reduce to per unit for faster calculation

**Q14. Answer: (c) 2024**

The correct answer is 2024.

Key Points

• The Pradhan Mantri Janjatiya Unnat Gram Abhiyaan (PMJUGA) was launched in 2024. It was initially announced by the Union Finance Minister Nirmala Sitharaman during the Union Budget 2024-25 presentation. Hence, the statement regarding 2024 is correct.

• The Union Cabinet, chaired by Prime Minister Narendra Modi, formally approved the mission on September 18, 2024, with a total outlay of Rs. 79,156 crore.

• This ambitious campaign is designed to improve the socio-economic condition of tribal-majority villages and Scheduled Tribe (ST) families across the country.

• The Abhiyaan aims to cover around 63,000 villages in 549 districts and 2,740 blocks across 30 States and Union Territories, benefiting approximately 5 crore tribal people.

• It focuses on 25 interventions implemented through 17 Central Ministries to ensure saturation of government schemes in tribal areas.

Additional Information

• Funding Structure: The total financial commitment of Rs. 79,156 crore involves a Central Share of Rs. 48,083 crore and a State

Share of Rs. 31,073 crore. This highlights the cooperative federalism approach to tribal development.

• Target Criteria: The mission identifies villages where the Scheduled Tribe population is at least 50% or where there are at least 500 ST residents in a cluster. This ensures that the benefits reach the most concentrated tribal pockets.

• Livelihood and Infrastructure: Key focus areas include providing pucca houses under PM Awas Yojana, piped water supply, electricity, all-weather roads, and high-speed internet to remote tribal hamlets.

• Sustainable Goals: The mission aligns with the Sustainable Development Goals (SDGs) by focusing on health, quality education, and poverty reduction specifically for the indigenous communities of India.

• Tribal Health and Education: It includes specific goals for Sickle Cell Anaemia screening and the strengthening of Eklavya Model Residential Schools (EMRS) to boost literacy rates and wellness among tribal youth.

Important Points

• Comparison with PM-JANMAN: In 2023, the government launched the PM-JANMAN (Pradhan Mantri Janjati Adivasi Nyaya Maha Abhiyan) specifically for Particularly Vulnerable Tribal Groups (PVTGs). While PM-JANMAN focuses on 75 PVTGs, the PMJUGA launched in 2024 has a much broader scope covering a larger Scheduled Tribe population.

• Implementation Strategy: The Ministry of Tribal Affairs acts as the nodal ministry, but the mission is a convergence of various schemes like Jal Jeevan Mission, PMGSY, and Ayushman Bharat.

• Tribal Entrepreneurship: The scheme also promotes tribal homestays and village-level entrepreneurship to integrate tribal economies with the mainstream market through Van Dhan Vikas Kendras.

• Monitoring: Progress is tracked using the PM-Gati Shakti portal to ensure spatial planning and transparency in the development of physical infrastructure in tribal regions.

**Q15. Answer: (c) 1**

Shortcut Trick

LCM of 4, 30, 30 = 60 (Total Work)

=> A = 60 ÷ 4 = 15, B = 60 ÷ 30 = 2, C = −2

=> Net = 15 + 2 − 2 = 15 units/hr

=> 1/4 work = 60 ÷ 4 = 15 units

=> Time = 15 ÷ 15 = 1 hr

Therefore Answer = 1 hour

Alternate Method

Given:

Tap A fills in 4 hours

Tap B fills in 30 hours

Tap C empties in 30 hours

Calculations:

| Tap | Total Work (LCM = 60) | Time (hours) | Efficiency (units/hr) |
|---|---|---|---|
| A | 60 | 4 | 60 ÷ 4 = 15 |
| B | 60 | 30 | 60 ÷ 30 = 2 |
| C | 60 | 30 | − (60 ÷ 30) = −2 |
| Total | 60 | • | 15 + 2 − 2 = 15 |

=> Work required = 1 ÷ 4 of 60 = 15 units

=> Net efficiency = 15 units/hr

=> Time = 15 ÷ 15 = 1 hour

Therefore Required time = 1 hour

Additional Information

LCM Method: Converts total work into integer units for easier calculation

Negative Efficiency: Emptying pipe has negative work rate

Net Work: Add all efficiencies considering sign

Partial Work: Required fraction = (Fraction) × Total Work

**Q16. Answer: (c) Son's son**

Family Chart:

Decoding the Symbols:

| Symbol | • | % | $ | – |
|---|---|---|---|---|
| Meaning | Brother | Mother | Father | Sister |

Given: W % A $ C + J

It means: W is the mother of A, A is the father of C, C is the brother of J.

Here, C is related to W as Son's son

Hence, the correct answer is "Option 3".

**Q17. Answer: (c) Government of NCT of Delhi Act, 1991**

The correct answer is Government of NCT of Delhi Act, 1991.

Key Points

• The Government of National Capital Territory of Delhi Act, 1991 was enacted by the Parliament to supplement the provisions of the Constitution relating to the Legislative Assembly and a Council of Ministers for the National Capital Territory of Delhi.

• This Act was passed following the 69th Constitutional Amendment Act, 1991, which inserted Article 239AA and Article 239AB into the Constitution of India, providing a special status to the Union Territory of Delhi. Hence, the statement regarding the 1991 Act is correct.

• The Legislative Assembly of Delhi was granted the power to make laws for the whole or any part of the NCT with respect to any of the matters enumerated in the State List or in the Concurrent List, except for three specific subjects: Public Order, Police, and Land.

• The Act specifies that the total number of seats in the Legislative Assembly shall be 70, and these members are chosen by direct election from territorial constituencies.

• The 1991 Act provides the operational framework for the functioning of the Delhi Government, including the conduct of business, the role of the Speaker, and the relationship between the Lieutenant Governor and the Council of Ministers.

Additional Information

• 69th Constitutional Amendment Act, 1991: This amendment officially designated the Union Territory of Delhi as the National Capital Territory of Delhi and provided for a Legislative Assembly and a Council of Ministers headed by a Chief Minister.

• Article 239AA: This specific article describes the special provisions with respect to Delhi. It mandates that the Administrator of Delhi shall be designated as the Lieutenant Governor (LG).

• Delhi Administration Act, 1966: Prior to the 1991 Act, Delhi was governed under the Delhi Administration Act, 1966, which provided for a Metropolitan Council and an Executive Council, but these bodies had limited recommendatory powers and were not a fully functional Legislative Assembly.

• Comparison with other UTs: Among the Union Territories in India, only Delhi, Puducherry, and Jammu & Kashmir (as per the J&K Reorganisation Act, 2019) are provided with their own Legislative Assemblies. Puducherry received its assembly through the 14th Amendment Act, 1962.

• Recent Amendments: The Government of National Capital Territory of Delhi (Amendment) Act, 2021, and the 2023 Amendment further clarified the powers of the Lieutenant Governor, stating that the expression "Government" referred to in any law made by the Legislative Assembly shall mean the Lieutenant Governor.

Important Points

• Composition of the Council: The Council of Ministers in Delhi is restricted to 10% of the total number of members in the Legislative Assembly. Since there are 70 seats, the Council of Ministers (including the Chief Minister) cannot exceed 7 members.

• Appointment: The Chief Minister of Delhi is appointed by the President of India (not the Lieutenant Governor), and other Ministers are appointed by the President on the advice of the Chief Minister.

• Year of Implementation: While the Act was passed in 1991, the first elections to the 70-member Delhi Legislative Assembly were held in 1993.

• Responsibility: The Council of Ministers is collectively responsible to the Legislative Assembly of the National Capital Territory.

• Difference from States: Unlike regular states where the Governor acts on the "aid and advice" of the ministers on most matters, in Delhi, the Lieutenant Governor has broader discretionary powers, particularly concerning matters outside the assembly's legislative competence (Police, Land, and Public Order).

**Q18. Answer: (c) Three**

The logic followed here is:

Given: Seven people B, C, D, O, P, Q and R are sitting around a circular table facing the centre of the table.

Only four people sit between D and C when counted from the right of D.

R sits third to the right of D.

P is an immediate neighbor of both C and R.

B sits third to the left of Q.

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So, the people between O and P are: 3 people

Hence, the correct answer is Option 3.

**Q19. Answer: (d) 89th Amendment**

The correct answer is 89th Amendment.

Key Points

• The 89th Amendment Act of 2003 is the legislation that bifurcated the erstwhile combined National Commission for Scheduled Castes and Scheduled Tribes into two separate bodies. Hence, statement 4 is correct.

• This amendment resulted in the creation of the National Commission for Scheduled Tribes (NCST) under a newly inserted Article 338A of the Constitution of India.

• The 65th Amendment Act of 1990 had previously replaced the single-member Special Officer for Scheduled Castes and Scheduled Tribes with a multi-member high-level National Commission. Hence, statement 3 is incorrect.

• The 97th Amendment Act of 2011 is related to the constitutional status and protection of co-operative societies, adding Part IXB to the Constitution. Hence, statement 2 is incorrect.

• The 102nd Amendment Act of 2018 granted constitutional status to the National Commission for Backward Classes (NCBC) by inserting Article 338B. Hence, statement 1 is incorrect.

Additional Information

• Historical Evolution: Originally, Article 338 of the Constitution provided for a Special Officer (designated as the Commissioner for SCs and STs) to investigate all matters relating to the safeguards provided for them.

• The 89th Amendment Rationale: The separation was done to provide more focused attention on the development and protection of Scheduled Tribes, acknowledging that their geographical and cultural needs differ significantly from those of Scheduled Castes.

• Establishment Date: Following the 89th Amendment, the National Commission for Scheduled Tribes officially came into existence on 19 February 2004.

• Constitutional Status: As it is established directly by Article 338A, the NCST is a Constitutional Body, which gives it higher authority and autonomy compared to statutory bodies.

• Geographical Focus: The commission works across India, with specific focus on areas with high tribal populations, including the Fifth Schedule and Sixth Schedule areas mentioned in the Constitution.

Important Points

• Composition of the Commission: The NCST consists of a Chairperson, a Vice-Chairperson, and three other members. It is mandatory that at least one of the members is a woman.

• Appointment and Tenure: All members are appointed by the President of India by warrant under his hand and seal. Their tenure of office and conditions of service are determined by the President, usually fixed at 3 years.

• Powers: The Commission has the power to regulate its own procedure and possesses all the powers of a civil court while investigating any matter. This includes summoning witnesses, requiring the production of documents, and receiving evidence on affidavits.

• Functions: Its primary duties include investigating and monitoring safeguards for Scheduled Tribes, inquiring into specific complaints regarding the deprivation of rights, and participating in the planning process of socio-economic development.

• Reporting Mechanism: The Commission submits annual reports to the President. The President causes these reports to be laid before each House of Parliament along with a memorandum explaining the action taken on the recommendations.

**Q20. Answer: (b) Only conclusion (I) follows**

Given Statements:

Some lakes are oceans.

All planets are oceans.

All lakes are roads.

The least possible Venn diagram shows:

Conclusions:

(I) Some oceans are roads

Since some lakes are oceans and all lakes are roads, that overlapping part of lakes (which are oceans) must also be roads.

So, some oceans are definitely roads.

Hence, conclusion I follows.

(II) Some planets are lakes

Planets are inside oceans, and lakes are also inside oceans, but there is no necessary overlap between planets and lakes.

So, conclusion II does not follow.

Therefore, only conclusion I follows.

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Hence, the correct answer is "Option 2".

**Q21. Answer: (a) 21**

Shortcut Trick

Amount doubles in 7 years

=> 8 times = $2^3$

=> So time = 3 × 7 = 21 years

Therefore Answer = 21 years

Alternate Method

Given:

Amount doubles in 7 years

Formula:

A = P(1 + r)^t

Calculations:

=> After 7 years: A = 2P => (1 + r)^7 = 2

=> For 8 times: A = 8P => (1 + r)^t = 8

=> 8 = $2^3$

=> (1 + r)^t = (1 + r)^(7×3)

=> t = 21 years

Therefore Required time = 21 years

Additional Information

Compound Growth: A = P(1 + r)^t

Doubling Concept: If money doubles in T years, then 4 times in 2T, 8 times in 3T

Exponential Rule: a^m × $a^n$ = a^(m+n)

Shortcut Insight: Convert multiples into powers of 2 for quick solving

**Q22. Answer: (a) Imagine, Innovate, Inspire for Viksit Bharat 2047**

The correct answer is Imagine, Innovate, Inspire for Viksit Bharat 2047.

Key Points

• The Emerging Science, Technology, and Innovation Conclave (ESTIC) held in November 2025 adopted the theme "Imagine, Innovate, Inspire for Viksit Bharat 2047". This theme reflects India's long-term vision of becoming a developed nation by the 100th year of its independence.

• The conclave serves as a premier platform for scientists, policymakers, industry leaders, and academia to deliberate on the future of Science, Technology, and Innovation (STI) in India. The focus was on creating a roadmap that aligns scientific research with national economic goals.

• The "Imagine" component of the theme focuses on visionary thinking and foresight in disruptive technologies, while "Innovate" emphasizes the transition of ideas from laboratories to the market through Research and Development (R&D).

• The "Inspire" element aims to cultivate a scientific temper among the youth and start-up ecosystem, ensuring a steady pipeline of talent to drive the Viksit Bharat agenda.

• During the event, various National Missions were reviewed to assess their progress toward making India a global hub for manufacturing and technology by 2047.

Additional Information

• Viksit Bharat 2047:

• This is a comprehensive vision by the Government of India to transform the country into a developed economy by 2047. It involves key pillars such as economic growth, social progress, environmental sustainability, and good governance.

• In the context of science, it envisions India as a top three global power in scientific publications and patent filings.

• Department of Science and Technology (DST):

• Established in May 1971, the DST functions under the Ministry of Science and Technology. It is the nodal agency for organizing and promoting science and technology activities in India.

• It plays a critical role in funding scientific research and implementing high-end technology missions like the National Quantum Mission.

• Key Technological Focus Areas:

• The conclave highlighted several emerging fields such as Artificial Intelligence (AI), Quantum Computing, Semiconductor manufacturing, and Green Hydrogen.

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• These sectors are identified as "Sunrise Sectors" that will drive the $30 trillion economy goal targeted for 2047.

• Anusandhan National Research Foundation (ANRF):

• The ANRF, established under the Anusandhan National Research Foundation Act, 2023, aims to provide high-level strategic direction for scientific research in the country.

• It seeks to bridge the gap between academic research and industrial application, which is a core objective of the ESTIC 2025.

Important Points

• Global Innovation Index (GII): India has shown a significant jump in the GII, moving from the 81st rank in 2015 to within the top 40 in recent years. Events like ESTIC are instrumental in maintaining this trajectory.

• Net Zero Goal: Technological innovations discussed at the conclave are vital for India to achieve its Net Zero emissions target by 2070, as pledged at COP26.

• Science and Technology Policy: The discussions at ESTIC 2025 are often used to refine the Science, Technology, and Innovation Policy (STIP) to ensure it remains relevant to changing global dynamics.

**Q23. Answer: (a) C. Rajagopalachari**

The correct answer is C. Rajagopalachari.

Key Points

• C. Rajagopalachari, also known as Rajaji, was a prominent leader of the Indian National Congress and a close confidant of Mahatma Gandhi.

• During the Civil Disobedience Movement in 1930, he was chosen to lead the salt protest in the Madras Presidency, mirroring Gandhi's Dandi March in Gujarat.

• The protest, known as the Vedaranyam Salt March, commenced from Trichinopoly (now Tiruchirappalli) on April 13, 1930, and concluded at Vedaranyam in the Tanjore district.

• The march covered a total distance of approximately 150 miles (240 kilometers) and lasted for about 15 days, ending on April 28, 1930.

• By picking up salt at the Vedaranyam coast, Rajaji symbolically broke the British Salt Laws, leading to his subsequent arrest and imprisonment by the colonial authorities.

Additional Information

• K. Kamaraj: He was a legendary leader from Tamil Nadu, known as the "Kingmaker" in Indian politics. Although he participated in the Vedaranyam March under Rajaji's leadership, he is best known for serving as the Chief Minister of Madras from 1954 to 1963 and introducing the Mid-day Meal Scheme in schools.

• Sardar Vallabhbhai Patel: Known as the "Iron Man of India," he led the Bardoli Satyagraha in 1928. He was instrumental in the political integration of India after 1947, ensuring the merger of over 560 princely states into the Indian Union.

• Sarojini Naidu: Known as the "Nightingale of India," she played a pivotal role in the Civil Disobedience Movement. Following Gandhi's arrest, she led the Dharasana Satyagraha in May 1930, a non-violent raid on the Dharasana Salt Works in Gujarat.

• Civil Disobedience Movement (1930): This nationwide movement was launched by Mahatma Gandhi with the Dandi March (March 12 – April 6, 1930). It aimed at total non-cooperation with the British Government by refusing to pay taxes, especially the Salt Tax, which affected the poorest citizens.

Important Points

• Political Career: C. Rajagopalachari served as the last Governor-General of India from 1948 to 1950. He was the only Indian-born individual to hold this high constitutional designation.

• Bharat Ratna: In 1954, he was among the first three recipients of India's highest civilian award, the Bharat Ratna, along with S. Radhakrishnan and C.V. Raman.

• Swatantra Party: In 1959, he founded the Swatantra Party, which advocated for free-market policies and opposed the Socialist agenda of the Jawaharlal Nehru-led Congress government.

• Literary Contributions: He was a prolific writer and translated the Ramayana and Mahabharata into English and Tamil, which remain highly popular versions of these epics today.

• Legacy in Madras: He served as the Premier of the Madras Presidency (1937–1939) and later as the Chief Minister of Madras State (1952–1954), where he introduced controversial reforms like the Kula Kalvi Thittam (Modified Scheme of Elementary Education).

**Q24. Answer: (d) LMV : QKA**

The logic followed here is:

For, RUB → WSG

For, BQL → GOQ

Now, checking the options:

Option 1) BCG → GYL

Option 2) KDH → NZK

Option 3) MHV → OCX

Option 4) LMV → QKA

Hence, the correct answer is Option 4.

**Q25. Answer: (c) February 2**

p>The correct answer is February 2.

Key Points

• World Wetlands Day is observed globally every year on February 2. In 2026, this day is dedicated to highlighting the synergy between nature and human history.

• The specific theme for the year 2026 is “Wetlands and traditional knowledge: Celebrating cultural heritage”. This theme emphasizes how indigenous communities and local traditions have historically contributed to the sustainable management and protection of wetland ecosystems.

• The date marks the anniversary of the signing of the Convention on Wetlands of International Importance, commonly known as the Ramsar Convention. It was adopted on February 2, 1971, in the Iranian city of Ramsar.

• The primary objective of this observance is to raise global awareness about the vital role wetlands play for people and our planet. Wetlands are essential for biodiversity, climate mitigation, and water security.

• The celebration in 2026 marks the 55th anniversary of the Ramsar Convention, serving as a reminder of the long-standing international commitment to preserving these "biological supermarkets."

Additional Information

• The Ramsar Convention: It is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. It is one of the oldest global environmental agreements.

• Wetlands in India: India became a party to the Ramsar Convention on February 1, 1982. Since then, the country has significantly increased its number of Ramsar Sites. As of 2024, India has 85 designated wetlands of international importance, covering a vast geographical area across various states.

• Ecological Importance: Wetlands are often referred to as the “Kidneys of the Earth” because they filter pollutants from water. They also act as massive carbon sinks, helping to sequester carbon dioxide and mitigate the effects of climate change.

• Biodiversity Support: Although they cover only about 6% of the Earth’s land surface, 40% of all plant and animal species live or breed in wetlands. They are crucial for migratory birds, providing essential stopover points during their long-distance travels.

• Economic Value: Millions of people depend on wetlands for their livelihoods, including fishing, agriculture, and tourism. They provide natural flood defense, saving billions of dollars in disaster management costs annually.

Important Points

• UN Recognition: On August 30, 2021, the United Nations General Assembly adopted resolution 75/317, which officially established February 2 as World Wetlands Day on the UN international calendar.

• Types of Wetlands: These include marine and coastal areas (like mangroves and coral reefs), estuaries, rivers, lakes, marshes, and even human-made sites like rice paddies and reservoirs.

• Cultural Connection: The 2026 theme focuses on the spiritual and historical value of wetlands. Many ancient civilizations thrived near wetlands, and traditional knowledge systems (like ancient irrigation or sustainable fishing) are now being recognized as keys to modern conservation.

• Threats to Wetlands: Despite their value, wetlands are disappearing three times faster than forests. Major threats include urbanization, industrial pollution, over-extraction of water, and invasive species.

• Global Participation: World Wetlands Day was first celebrated in 1997. Since then, government agencies, NGOs, and community groups use the day to undertake restoration projects, educational seminars, and nature walks to promote environmental stewardship.

**Q26. Answer: (b) Kudankulam Atomic Power Plant**

The correct answer is Kudankulam Atomic Power Plant.

Key Points

• The Kudankulam Atomic Power Plant (KKNPP), located in the Tirunelveli district of Tamil Nadu, is the highest-capacity nuclear power station in India as of 2023. It currently has an installed capacity of 2000 MW, consisting of two VVER-1000 units of 1000 MW each. This makes it the leading contributor to India's nuclear energy grid. Hence, statement 2 is correct.

• The Tarapur Atomic Power Station (TAPS) is located in Palghar, Maharashtra. It was the first commercial nuclear power station built in India, starting in 1969. As of 2023, its total capacity is 1400 MW, comprising two older 160 MW units and two newer 540 MW units. While significant, its capacity is lower than Kudankulam. Hence, statement 4 is incorrect.

• The Kakrapar Atomic Power Station (KAPS) is situated in Gujarat. With the recent commissioning of Unit 3 and Unit 4 (each 700 MW), the total capacity has significantly increased. However, its total operational capacity as of early 2023 remained below the

2000 MW mark set by Kudankulam. Hence, statement 3 is incorrect.

• The Narora Atomic Power Plant (NAPS) is located in the Bulandshahr district of Uttar Pradesh. It operates two PHWR units with a total capacity of 440 MW (220 MW each). It has the lowest capacity among the four options provided. Hence, statement 1 is incorrect.

Additional Information

• Nuclear Power Corporation of India Limited (NPCIL):

• NPCIL is a Public Sector Enterprise under the Department of Atomic Energy (DAE), Government of India. It was incorporated in September 1987 under the Companies Act, 1956.

• Its primary objective is the design, construction, operation, and maintenance of atomic power stations for the generation of electricity in pursuance of the schemes and programs of the Government of India under the Atomic Energy Act, 1962.

• International Cooperation in Nuclear Energy:

• The Kudankulam project is a result of an inter-governmental agreement between India and the former Soviet Union (now Russia) signed in 1988. Russia provides the technical expertise and VVER (Water-Water Energetic Reactor) technology.

• Tarapur was initially built with the help of the United States (General Electric), utilizing Boiling Water Reactors (BWR), which were later supplemented by indigenous Pressurized Heavy Water Reactors (PHWR).

• India's Three-Stage Nuclear Power Programme:

• Formulated by Dr. Homi J. Bhabha in the 1950s, the program aims to utilize India's vast Thorium reserves.

• Stage 1: Uses Pressurized Heavy Water Reactors (PHWR) fueled by Natural Uranium.

• Stage 2: Uses Fast Breeder Reactors (FBR) fueled by Plutonium-239.

• Stage 3: Aims to use Thorium-232 in Advanced Heavy Water Reactors to produce Uranium-233.

• Geographic Distribution of Major Plants:

• Kaiga Generating Station: Located in Karnataka with a capacity of 880 MW.

• Rajasthan Atomic Power Station (RAPS): Located in Rawatbhata, Rajasthan, with a capacity of approximately 1180 MW.

• Madras Atomic Power Station (MAPS): Located in Kalpakkam, Tamil Nadu, with a capacity of 440 MW.

Important Points

• Expansion Plans: India aims to increase its nuclear power capacity to 22,480 MW by the year 2031. This involves the construction of more 700 MW PHWR units and additional 1000 MW VVER units at Kudankulam (Units 3, 4, 5, and 6).

• Safety Features: Modern Indian nuclear plants, especially the Kudankulam units, incorporate Generation III+ safety features, including passive cooling systems that can function even in the event of a total power failure.

• Clean Energy Contribution: Nuclear energy is a critical part of India's strategy to achieve Net Zero emissions by 2070, as it provides a stable "base load" of electricity without the carbon emissions associated with coal or gas.

**Q27. Answer: (b) Only conclusion (II) follows**

Given Statements:

Some beds are pillows.

All pillows are towels.

All towels are cushions.

The least possible Venn diagram shows:

Conclusions:

(I) All cushions are pillows

This does not follow because only pillows are inside cushions, not the reverse. Cushions can exist beyond pillows. So this conclusion is false.

(II) Some towels are beds

Some beds are pillows, and all pillows are towels. So those beds (which are pillows) must also be towels.

Therefore, some towels are definitely beds. So this conclusion follows.

Hence, only conclusion (II) follows.

Hence, the correct answer is "Option 2".

**Q28. Answer: (b) They encourage thrift and extend micro-credit facilities to poor rural women**

The correct answer is They encourage thrift and extend micro-credit facilities to poor rural women.

Key Points

• Self-Help Groups (SHGs) are informal associations of people who choose to come together to find ways to improve their living conditions. They are primarily designed to encourage thrift (savings) and provide micro-credit to their members. Hence, the statement that they encourage thrift and extend micro-credit facilities to poor rural women is correct.

• These groups typically consist of 10 to 20 members, mostly from similar socio-economic backgrounds, who pool their small savings regularly. This pooled resource is then used to give small interest-bearing loans to members for their emergency or consumption needs.

• Statement 1 suggests they provide large-scale industrial loans to farmers. This is inaccurate as SHGs focus on micro-finance and small-scale livelihood activities rather than heavy industrial credit. Hence, statement 1 is incorrect.

• Statement 3 claims they operate as regional offices of the Reserve Bank of India (RBI). The RBI is India's central bank and a regulatory body; SHGs are community-based organizations and do not function as administrative arms of the RBI. Hence, statement 3 is incorrect.

• Statement 4 mentions they function as government-owned cooperative banks. While SHGs may link with banks, they are self-governed and informal in nature, unlike cooperative banks which are statutory bodies registered under the Cooperative Societies Act. Hence, statement 4 is incorrect.

Additional Information

• Origin and Growth: The SHG movement in India gained momentum in the 1980s, pioneered by NGOs like MYRADA in Karnataka. It was formalized when NABARD (National Bank for Agriculture and Rural Development) launched the SHG-Bank Linkage Project in 1992, which has since become the world's largest micro-finance project.

• Government Schemes: The National Rural Livelihoods Mission (NRLM), renamed Deendayal Antyodaya Yojana (DAY-NRLM) in 2015, is the flagship central scheme that promotes SHGs across India to alleviate poverty and promote women's empowerment.

• Features and Functions: SHGs work on the principle of "Mutual Help". They help members overcome the lack of collateral, which is the biggest hurdle for the poor in obtaining bank loans. The peer pressure within the group ensures timely repayment of loans.

• Social Impact: Beyond finance, SHGs act as a platform for rural women to discuss social issues like health, nutrition, domestic violence, and education, leading to significant social empowerment and gender equality in rural areas.

Important Points

• Economic Significance: SHGs reduce the dependence of rural households on informal moneylenders who often charge usurious interest rates. By providing affordable credit, they enable income-generating activities such as poultry, tailoring, and small-scale farming.

• Financial Inclusion: They are a vital tool for financial inclusion in India, bringing the "unbanked" population into the formal banking system. The SBLP (SHG-Bank Linkage Program) allows groups to open savings accounts in commercial banks, Regional Rural Banks (RRBs), and cooperative banks.

• Membership Criteria: Usually, only one person from a family can join a particular SHG. Most groups are all-women groups, as research shows that credit provided to women has a more positive impact on family welfare and child education.

• Lakhpati Didi Initiative: In recent years (specifically in 2023-2024), the Government of India set a target to create 3 crore "Lakhpati Didis" (SHG members earning at least Rs. 1 lakh per annum) through skill development and market linkages.

**Q29. Answer: (c) JFH**

The logic followed here is based on the alphabetical positional difference between consecutive letters in each cluster:

Option 1: PLO

Option 2: LHK

Option 3: JFH

Option 4: NJM

Thus, JFH is different from the rest.

Hence, the odd one out is Option 3.

**Q30. Answer: (c) Mission LiFE**

The correct answer is Mission LiFE.

Key Points

• Mission LiFE (Lifestyle for Environment) is an India-led global mass movement that encourages individual and community action to protect and preserve the environment. It was highlighted as a central theme by India at the Seventh session of the United Nations Environment Assembly (UNEA-7) held in December 2025.

• The initiative is designed to nudge individuals to adopt simple, environment-friendly actions in their daily lives, which collectively lead to a significant impact on Climate Action and Sustainable Development.

• It directly contributes to SDG 12 (Responsible Consumption and Production) by promoting mindful utilization of resources and SDG 13 (Climate Action) by reducing carbon footprints through sustainable lifestyle choices.

• The core philosophy of the mission is to replace the prevalent "use-and-dispose" economy with a Circular Economy, defined by mindful and deliberate utilization instead of mindless and destructive consumption.

• The mission envisions a global network of individuals known as "Pro-Planet People" (P3), who share a common commitment to adopting and promoting environment-friendly lifestyles.

Additional Information

• Origin and Evolution: Mission LiFE was first introduced by the Prime Minister of India during the COP26 summit in Glasgow in 2021. It was later formally launched at Kevadia, Gujarat, in October 2022 in the presence of the UN Secretary-General.

• Implementation Strategy: The mission is implemented in three distinct phases:

• Phase I (Change in Demand): Encouraging individuals to practice simple yet effective environment-friendly actions.

• Phase II (Change in Supply): Inducing industries and markets to respond to the shift in demand by providing sustainable products.

• Phase III (Change in Policy): Influencing government and industrial policy to support sustainable consumption and production.

• Swachh Bharat Abhiyan: Launched on October 2, 2014, this mission focuses on universal sanitation coverage and making India Open Defecation Free (ODF). While related to the environment, its primary focus is hygiene and waste management rather than the broader lifestyle changes of Mission LiFE.

• Make in India: Launched in September 2014, this initiative aims to transform India into a global design and manufacturing hub. It focuses on 25 sectors of the economy to create jobs and enhance skill sets.

• Digital India: Launched in July 2015, this campaign aims to ensure that government services are made available to citizens electronically by improving online infrastructure and increasing Internet connectivity.

Important Points

• The United Nations Environment Assembly (UNEA) is the world's highest-level decision-making body on the environment. It meets biennially in Nairobi, Kenya, to set the global environmental agenda.

• The UNEA-7 session in 2025 emphasized the "Triple Planetary Crisis": Climate Change, Biodiversity Loss, and Pollution.

• NITI Aayog is the nodal agency in India for coordinating the implementation of Mission LiFE, working alongside the Ministry of Environment, Forest and Climate Change (MoEFCC).

• Specific actions under Mission LiFE include saving energy (switching off lights), saving water, reducing single-use plastic, sustainable food systems, and waste reduction (e-waste and food waste).

**Q31. Answer: (d) Alleles**

The correct answer is Alleles.

Key Points

• Alleles are defined as the alternative or different forms of a gene that occupy the same locus (position) on homologous chromosomes. They are responsible for the variations in a specific hereditary characteristic. Hence, the statement regarding Alleles is correct.

• Every individual inherits two alleles for each gene, one from each parent. These alleles can be identical or different, determining the genetic diversity within a species.

• The function of alleles is to encode for slightly different versions of the same protein, which ultimately results in different phenotypic traits such as eye color or blood type.

• In classical genetics, alleles are categorized as dominant or recessive. A dominant allele masks the expression of a recessive allele in a heterozygous state.

• The numerical value of alleles for a single gene in a diploid organism is 2, but in a population, there can be multiple alleles for a single trait.

Additional Information

• Genotypes: This term refers to the complete genetic makeup or DNA sequence of an organism. It is the internal hereditary information that contributes to the physical expression of traits. Hence, the statement regarding Genotypes is incorrect.

• Phenotypes: This refers to the observable physical characteristics or traits of an organism, such as height, skin color, and behavior. It is the result of the interaction between the genotype and the environment. Hence, the statement regarding Phenotypes is incorrect.

• Chromosomes: These are long, thread-like structures located in the nucleus of animal and plant cells. Each chromosome is made of protein and a single molecule of deoxyribonucleic acid (DNA). Humans have 46 chromosomes arranged in 23 pairs. Hence, the statement regarding Chromosomes is incorrect.

• Gregor Mendel: Often called the "Father of Genetics," he conducted experiments on pea plants in the year 1865, which led to the discovery of the laws of inheritance involving what we now call alleles.

• Homozygous and Heterozygous: When an individual has two identical alleles (e.g., AA or aa), they are homozygous; when they have two different alleles (e.g., Aa), they are heterozygous.

Important Points

• Multiple Alleles: While an individual carries only two alleles, a population can have multiple alleles for a gene. A prime example is the ABO blood group system in humans, which is controlled by three alleles: IA, IB, and i.

• Incomplete Dominance: This occurs when the phenotype of the heterozygote is an intermediate between the phenotypes of the two homozygotes. An example is the pink flowers produced by crossing red and white snapdragons.

• Co-dominance: In this genetic scenario, both alleles in a heterozygote are fully expressed. For example, in AB blood type, both

the A and B antigens are present on the surface of red blood cells.

• Mutation: New alleles are created through mutations, which are permanent changes in the DNA sequence. This is a key feature of evolution and biological adaptation.

**Q32. Answer: (d) Madayagari Mallana**

The correct answer is Madayagari Mallana.

Key Points

• Madayagari Mallana was a distinguished Telugu poet of the 16th century and a vital member of the Ashtadiggajas. This group comprised eight legendary poets who adorned the court of Emperor Krishnadevaraya during the Vijayanagara Empire.

• He is best known for composing the Rajashekharacharitra, a significant work in the Prabandha genre of Telugu literature. This literary piece intricately describes the life, military expeditions (wars), and romantic pursuits (loves) of Rajashekhara, the King of Avanti. Hence, the statement regarding Madayagari Mallana as the author is correct.

• The Rajashekharacharitra is highly regarded for its stylistic elegance and vivid descriptions. Madayagari Mallana dedicated this work to Nadiru Timmarusu, who was the Mahapradhani (Prime Minister) of Krishnadevaraya and a major political figure of that era.

• His writing reflects the cultural zenith of the Tuluva Dynasty, emphasizing themes of chivalry, governance, and courtly love, which were characteristic of the Golden Age of Telugu Literature.

Additional Information

• Allasani Peddana:

• Known as the Andhra Kavita Pitamaha (Grandfather of Telugu Poetry), he was the most prominent of the Ashtadiggajas.

• His most famous work is Manucharitra (Swarochisha Manu Sambhavamu), which is considered the first Prabandha in Telugu.

• Krishnadevaraya:

• He was the Emperor of the Vijayanagara Empire from 1509 to 1529 and a great patron of arts and letters.

• A scholar himself, he authored Amuktamalyada in Telugu and the play Jambavati Kalyanam in Sanskrit.

• Nachana Somanatha:

• A famous poet from the 14th century, he preceded the Vijayanagara golden era but influenced many later poets.

• His masterpiece is Uttara Harivamsam, and he held the title Sakalagama Chakravarti for his vast knowledge.

• Ashtadiggajas:

• The eight pillars of the literary assembly in Krishnadevaraya's court included Allasani Peddana, Nandi Thimmana, Dhurjati, Madayagari Mallana, Ayyalaraju Ramabhadrudu, Pingali Surana, Ramarajabhushanudu, and Tenali Ramakrishna.

Important Points

• The Prabandha style is a form of Telugu poetry that revolves around a specific theme, usually a puranic story or a historical legend, embellished with descriptions of nature, battles, and weddings.

• The reign of Krishnadevaraya saw the transition of Telugu literature from mere translations of Sanskrit epics to original, creative Prabandhas.

• The historical context of the Rajashekharacharitra suggests that poets like Mallana used fictionalized versions of kings (like the King of Avanti) to mirror the bravery and virtues of their contemporary patrons in Hampi.

**Q33. Answer: (a) Article 243 J and Article 243 Z**

The correct answer is Article 243 J and Article 243 Z.

Key Points

• Article 243 J of the Indian Constitution specifically mandates the Audit of accounts of Panchayats. It states that the Legislature of a State may, by law, make provisions with respect to the maintenance of accounts by the Panchayats and the auditing of such accounts. Hence, the first part of the statement in the option is correct.

• Article 243 Z deals with the Audit of accounts of Municipalities. Similar to the provisions for rural bodies, it empowers the State Legislature to frame laws regarding the maintenance and auditing of accounts for urban local bodies to ensure financial transparency. Hence, the second part of the statement in the option is correct.

• These articles were incorporated into the Constitution through the 73rd Constitutional Amendment Act and the 74th Constitutional Amendment Act of 1992, respectively.

• The primary function of these audits is to ensure that the funds allocated to Local Self-Governments (both rural and urban) are utilized for their intended applications and to prevent financial irregularities.

• Under these provisions, the State Government determines the authority or organization responsible for conducting the audit, which often involves the Director of Local Fund Audit or the Comptroller and Auditor General (CAG) in some states.

Additional Information

• Article 243 I and Article 243 Y:

• Article 243 I provides for the constitution of a Finance Commission at the State level every five years to review the financial

position of the Panchayats.

• Article 243 Y performs the same function for Municipalities, ensuring that taxes, duties, and tolls are properly distributed between the State and the urban local bodies.

• Article 243 G and Article 243 W:

• Article 243 G outlines the powers, authority, and responsibilities of Panchayats, enabling them to function as institutions of self-government.

• Article 243 W details the powers and responsibilities of Municipalities regarding the preparation of plans for economic development and social justice.

• Article 243 M and Article 243 ZA:

• Article 243 M specifies locations and areas where the provisions of Part IX (Panchayats) do not apply, such as certain Scheduled Areas and Tribal Areas.

• Article 243 ZA deals with the elections to the Municipalities, vesting the superintendence, direction, and control of elections in the State Election Commission.

• Article 243 ZB:

• This article specifies the application of the provisions of Part IXA (Municipalities) to Union Territories of India.

Important Points

• The 73rd Amendment Act added Part IX to the Constitution, titled "The Panchayats," and the Eleventh Schedule, which contains 29 functional items.

• The 74th Amendment Act added Part IXA, titled "The Municipalities," and the Twelfth Schedule, which contains 18 functional items.

• The State Election Commission, established under Article 243 K, is responsible for conducting elections for both Panchayats and Municipalities, ensuring democratic decentralization at the grassroots level.

• The minimum age to contest elections for these local bodies is 21 years, as per Article 243 F and Article 243 V.

• A mandatory reservation of one-third (33%) of the total number of seats is provided for women in both rural and urban local bodies to promote gender inclusion in governance.

**Q34. Answer: (d) 205**

The logic followed here is:

Logic: Second number = First number + 51

107 → 158

=> 107 + 51 = 158

122 → 173

=> 122 + 51 = 173

Now, applying the same logic: 154 → 154 + 51 = 205

Now, checking options:

Option 1) 213 → not matching

Option 2) 218 → not matching

Option 3) 198 → not matching

Option 4) 205 → matches

Hence, the correct answer is Option 4.

**Q35. Answer: (d) 9375**

Shortcut Trick

Winning margin = 52% − 48% = 4% of valid votes

=> 4% = 291 => 1% = 291 ÷ 4 = 72.75

=> Valid votes = 72.75 × 100 = 7275

=> Polled votes = 7275 ÷ 0.97 = 7500

=> Registered voters = 7500 ÷ 0.8 = 9375

Therefore Answer = 9375

Alternate Method

Given:

Votes polled = 80% of registered voters

Invalid votes = 3%

Valid votes = 97%

Winner gets 52%, loser gets 48%
Margin = 291 votes
Formula:
Margin = Difference% of valid votes
Calculations:
=> Difference = 52% − 48% = 4%
=> 4% of valid votes = 291
=> Valid votes = (291 × 100) ÷ 4 = 7275
=> Valid = 97% of polled
=> Polled = 7275 ÷ 0.97 = 7500
=> Polled = 80% of registered
=> Registered = 7500 ÷ 0.8 = 9375
Therefore Total registered voters = 9375
Additional Information
Margin Trick: Margin = Difference% of valid votes
Reverse Percentage: Total = Part ÷ (Percentage ÷ 100)
Vote Breakdown: Always move stepwise → Valid → Polled → Registered
Shortcut Tip: Convert % difference directly into votes to save time

**Q36. Answer: (a) 9**

The logic followed here is:
Given:
COOK → 8245
HOOK → 5429
Here, H = 9
Hence, the correct answer is "Option 1".

**Q37. Answer: (a) 44%**

Shortcut Trick
=> Total ratio = 2 + 3 + 4 = 9
=> Largest angle share = 4/9
=> Percentage = (4/9) × 100 ≈ 44.44%
Therefore Answer = 44%
Alternate Method
Given:
Ratio of angles = 2 : 3 : 4
Formula:
Sum of angles in triangle = 180°
Calculation:
=> Total ratio = 2 + 3 + 4 = 9
=> Largest angle = (4/9) × 180 = 80°
=> Percentage = (80 / 180) × 100 ≈ 44.44%
=> Rounded value = 44%
Final Answer: 44%
Additional Information
1. Triangle Sum: Sum of all angles = 180°
2. Ratio Method: Actual value = (part/total parts) × total
3. Percentage: (part/whole) × 100
4. Shortcut: Largest % = largest ratio / total ratio × 100

**Q38. Answer: (d) 1**

Shortcut Trick
=> Number of meeting points = Difference in laps when they meet

=> LCM of 85 and 90 = 1530 seconds

=> Laps by Shahrukh = 1530 ÷ 85 = 18

=> Laps by Amir = 1530 ÷ 90 = 17

=> Difference = 18 − 17 = 1

Therefore Answer = 1

Alternate Method

Given:

Time of Shahrukh = 85 s

Time of Amir = 90 s :contentReference[oaicite:0]{index=0}

Formula:

Relative speed = (1 ÷ T1) − (1 ÷ T2)

Meeting time = 1 ÷ Relative speed

Calculations:

=> Relative speed = (1 ÷ 85) − (1 ÷ 90)

=> = (90 − 85) ÷ (85 × 90)

=> = 5 ÷ 7650

=> = 1 ÷ 1530

=> Meeting time = 1 ÷ (1 ÷ 1530) = 1530 s

=> Laps by Shahrukh = 1530 ÷ 85 = 18

=> Laps by Amir = 1530 ÷ 90 = 17

=> Difference in laps = 1

Therefore Final Answer = 1

Additional Information

Relative Speed Concept: For same direction, subtract speeds → V_(rel) = V1 − V2

Meeting Time: Time between meetings = Track length ÷ relative speed

LCM Method: First meeting occurs at LCM of individual times

Circular Motion Insight: Meeting points = difference in number of laps completed

**Q39. Answer: (d) Dubai**

The correct answer is Dubai.

Key Points

• The 7th Future Food Forum 2025 is scheduled to be hosted in Dubai, United Arab Emirates (UAE). This forum has established itself as the leading regional platform for the Food and Beverage (F&B) industry to discuss the future of food manufacturing and distribution.

• The event is organized by the UAE Food & Beverage Manufacturers Group (FBMG), an organization that operates under the Dubai Chamber of Commerce. It serves as a critical bridge between government regulators and private sector manufacturers.

• The primary focus of the 2025 forum is on food security and sustainability, aligning with the UAE's broader vision to become a global leader in food innovation. It addresses the challenges of global supply chains, climate change, and the need for nutritional security.

• The forum facilitates high-level discussions involving the Ministry of Economy, the Ministry of Climate Change and Environment, and various international food agencies. It aims to foster innovation and digital transformation within the food production cycle.

• By hosting this event, Dubai reinforces its position as a global re-export hub and a central node for the Middle East and North Africa (MENA) region's food trade, supporting the Dubai Economic Agenda D33.

Additional Information

• UAE National Food Security Strategy 2051:

• This strategy aims to put the UAE at the top of the Global Food Security Index by the year 2051.

• It focuses on facilitating the global food trade, diversifying food import sources, and identifying alternative supply schemes to ensure resilience against geopolitical risks.

• The strategy also promotes sustainable local food production through the use of modern technologies such as hydroponics and vertical farming.

• Role of the UAE Food & Beverage Manufacturers Group (FBMG):

• The FBMG represents a diverse range of companies, from multinational corporations to Small and Medium Enterprises (SMEs), providing them a voice in policy-making.

• It helps in implementing standards for food safety and labeling, ensuring that products manufactured in Dubai meet international

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quality benchmarks.

• Sustainability and the Circular Economy:

• The forum emphasizes the Circular Economy, specifically targeting the reduction of food waste and the repurposing of resources within the manufacturing process.

• In line with the COP28 legacy held in the UAE, the food sector is under pressure to reduce its carbon footprint and adopt eco-friendly packaging solutions.

• Innovation in AgTech:

• Dubai has become a testing ground for Agricultural Technology (AgTech), utilizing Artificial Intelligence (AI) and Internet of Things (IoT) to optimize crop yields and water consumption in desert environments.

• The 7th Future Food Forum showcases advancements in alternative proteins and lab-grown meat, reflecting changing consumer preferences and environmental concerns.

Important Points

• Economic Impact: The food sector is one of the largest non-oil sectors in the UAE economy. Events like the Future Food Forum help attract Foreign Direct Investment (FDI) into the industrial sector.

• Regional Significance: While Singapore is a leader in AgTech in Asia and New Delhi is a major agricultural hub, Dubai serves as the strategic link for the Global South, facilitating trade between Africa, Europe, and Asia.

• Consumer Safety: A key theme of the forum is food traceability. Using Blockchain technology, the UAE aims to ensure that every food item can be traced back to its source, enhancing public health and consumer trust.

• Data and Facts: The UAE imports approximately 80-90% of its food, making the discussions at the Future Food Forum vital for the nation's strategic reserves and price stability.

**Q40. Answer: (d) 1146/11**

Shortcut Trick

=> (n − 2)×180 = 1620 => n = 11

=> Interior = 1620/11, Exterior = 360/11

=> Difference = (1620 − 360)/11 = 1260/11

=> = 1146/11

Therefore Answer = 1146/11

Alternate Method

Given:

Sum of interior angles = 1620°

Formula:

(n − 2) × 180 = 1620

Interior angle = 1620 / n

Exterior angle = 360 / n

Calculation:

=> (n − 2) × 180 = 1620

=> n − 2 = 9 => n = 11

=> Interior angle = 1620 / 11

=> Exterior angle = 360 / 11

=> Difference = (1620/11 − 360/11)

=> = 1260/11

=> = 1146/11

Final Answer: 1146/11

Additional Information

1. Interior Sum: (n − 2) × 180

2. Exterior Angle: 360 / n

3. Relation: Interior + Exterior = 180°

4. Mixed Fraction: Improper fraction → a b/c

**Q41. Answer: (d) Grid system of town planning**

The correct answer is Grid system of town planning.

Key Points

• The Harappan Civilization, also known as the Indus Valley Civilization, is world-renowned for its advanced urban planning. The

most striking feature of these cities was the Grid system, where streets and lanes were laid out to cut each other at right angles (90 degrees), dividing the city into rectangular blocks.

• Unlike many contemporary civilizations, Harappan cities like Mohenjo-daro and Harappa were divided into two distinct parts: a raised Citadel (or Acropolis) on the western side, which housed important public buildings, and a larger Lower Town on the eastern side, where the common citizens resided.

• The use of standardized burnt bricks for construction was a hallmark of their engineering. These bricks followed a uniform ratio of 1:2:4 (thickness:width:length), ensuring structural integrity across various sites located hundreds of miles apart.

• Every house was connected to a highly sophisticated drainage system. These drains were made of mortar, lime, and gypsum and were covered with stone slabs or large bricks that could be removed for cleaning, indicating a high level of concern for sanitation and hygiene.

• The Great Granaries found at Harappa and Mohenjo-daro suggest a centralized system for storing surplus grains, which was a critical economic feature of their urban lifestyle.

Additional Information

• Geographical Extent and Age: The civilization flourished during the Bronze Age, roughly between 3300 BCE and 1300 BCE, with its mature phase occurring between 2600 BCE and 1900 BCE. It spread across present-day India, Pakistan, and Afghanistan.

• Mohenjo-daro: Located in the Larkana district of Sindh, Pakistan, on the banks of the Indus River. It is famous for the Great Bath, a large rectangular tank used for ritual bathing, and the discovery of the Dancing Girl bronze statue.

• Harappa: The first site to be excavated in 1921 by Daya Ram Sahni. It is located on the banks of the Ravi River in the Sahiwal district of Punjab, Pakistan.

• Lothal: Situated in Gujarat, India, this site featured the world's earliest known artificial dockyard, connecting the city to an old course of the Sabarmati River, facilitating maritime trade with Mesopotamia.

• Dholavira: Located in the Rann of Kutch, Gujarat, it is unique for its three-part city division (Citadel, Middle Town, and Lower Town) and an extraordinary water management system consisting of giant reservoirs.

• Kalibangan: Found in Hanumangarh, Rajasthan, it provides the earliest evidence of ploughed fields and contains both Pre-Harappan and Harappan cultural phases.

Important Points

• Wooden houses: While timber was used for roofs and doors, Harappan houses were primarily built with baked bricks and mud bricks. They did not rely on wooden structures as their primary architectural feature. Hence, this statement is incorrect.

• Stone palaces: The Harappans focused on functional civic architecture rather than monumental stone palaces or temples. While stone was used in sites like Dholavira, the concept of "stone palaces" as seen in later empires was absent. Hence, this statement is incorrect.

• Irregular street patterns: The Harappan cities were the antithesis of irregular patterns. They are celebrated specifically for their planned, systematic layout and geometric precision. Hence, this statement is incorrect.

• Grid system of town planning: This was the most defining characteristic of the Indus Valley Civilization, showcasing their expertise in geometry and urban management. Hence, this statement is correct.

**Q42. Answer: (a) LK−IK**

The logic followed here is based on the alphabetical position shift between corresponding letters in each pair:

Option 1: LK − IK

Option 2: ZY − XW

Option 3: YX − WV

Option 4: RQ − PO

Thus, LK − IK is different from the rest.

Hence, the odd one out is Option 1.

**Q43. Answer: (a) 60**

Shortcut Trick

Profit = 25% => SP : CP = 5 : 4

=> 48 SP = x CP

=> 48 × 5 = x × 4

=> x = (48 × 5) ÷ 4 = 60

Therefore Answer = 60

Alternate Method

Given:

SP of 48 items = CP of x items

Profit = 25%

Concept Used:

Profit% = [(SP − CP) ÷ CP] × 100

Calculation:

=> Profit = 25%

=> SP = 1.25 CP

=> SP of 48 items = CP of x items

=> 48 × SP = x × CP

=> 48 × 1.25CP = x × CP

=> 48 × 1.25 = x

=> x = 60

Therefore The correct answer is 60.

Additional Information

Profit Formula: Profit% = (Profit ÷ CP) × 100

SP-CP Relation: SP = CP × (1 + Profit%)

Ratio Trick: 25% profit => SP : CP = 5 : 4

Shortcut Tip: Use ratio instead of decimals for faster solving

**Q44. Answer: (b) Sulphur dioxide**

The correct answer is Sulphur dioxide.

Key Points

• Sulphur dioxide (SO2) is a colorless gas with a pungent smell, primarily produced from the burning of fossil fuels like coal and oil in power plants and industrial boilers. It is the most significant pollutant closely linked to the formation of acid rain. Hence, option 2 is correct.

• When sulphur dioxide is released into the atmosphere, it reacts with water vapor, oxygen, and other oxidants to form sulphuric acid (H2SO4), which then mixes with rain, snow, or fog.

• Ammonia (NH3) is a nitrogen-based compound often released from agricultural activities and livestock waste; while it can contribute to nitrogen deposition in soil, it is not the primary chemical driver for acid rain formation. Hence, option 1 is incorrect.

• Ozone (O3) is a secondary pollutant found in the troposphere, formed by the reaction of Nitrogen Oxides and Volatile Organic Compounds in the presence of sunlight. It is a major component of smog but does not directly cause acid rain. Hence, option 3 is incorrect.

• Methane (CH4) is a powerful greenhouse gas responsible for global warming and climate change, but it does not possess the chemical properties required to increase the acidity of precipitation. Hence, option 4 is incorrect.

Additional Information

• Definition of Acid Rain: It refers to any form of precipitation—rain, snow, fog, or hail—that is unusually acidic, meaning it possesses elevated levels of hydrogen ions. Normal rain has a pH of about 5.6, whereas acid rain typically has a pH between 4.2 and 4.4.

• Nitrogen Oxides (NOx): Along with sulphur dioxide, nitrogen oxides (emitted from motor vehicles and electric utilities) are the other major precursors. They react in the air to form nitric acid (HNO3).

• Environmental Impact: Acid rain causes the acidification of lakes and streams, which can be toxic to fish and other aquatic animals. It also leaches aluminum from the soil, which is harmful to forest ecosystems and plants.

• Effect on Infrastructure: It accelerates the corrosion of metals (such as bronze) and the deterioration of paint and stone (such as marble and limestone). Famous monuments like the Taj Mahal in India have faced threats of yellowing due to pollutants like SO2 from nearby industries.

Important Points

• Chemical Reaction: The oxidation of sulphur dioxide to form sulphuric acid often occurs on the surface of aerosol particles or through liquid-phase reactions in cloud droplets.

• Natural Sources: While human activity is the leading cause, natural events like volcanic eruptions and decaying vegetation also release sulphur dioxide into the atmosphere.

• Historical Context: The phenomenon of acid rain was first observed by Robert Angus Smith in 1852 in Manchester, England, which was a hub during the Industrial Revolution.

• Global Mitigation: Many countries have signed international treaties and enacted laws like the Clean Air Act to reduce emissions of SO2 and NOx through the use of scrubbers in power plants and catalytic converters in vehicles.

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**Q45. Answer: (c) PM-SVANidhi**

The correct answer is PM-SVANidhi.

Key Points

• The PM-SVANidhi (Pradhan Mantri Street Vendor's AtmaNirbhar Nidhi) was launched by the Ministry of Housing and Urban Affairs on June 1, 2020. It aims to provide affordable working capital loans to street vendors to resume their livelihoods that were adversely affected by the COVID-19 lockdown. Hence, this option is correct.

• Under this scheme, vendors can avail of a collateral-free working capital loan of up to Rs. 10,000 with a tenure of one year. On timely or early repayment, the vendor is eligible for the next cycle of working capital loan with an enhanced limit of Rs. 20,000 and Rs. 50,000 respectively.

• The scheme provides an interest subsidy at the rate of 7% per annum, which is credited to the beneficiary's bank account through Direct Benefit Transfer (DBT) on a quarterly basis.

• To promote digital transactions, the scheme offers a monthly cashback ranging from Rs. 50 to Rs. 100 for vendors who accept or make digital payments.

• The Small Industries Development Bank of India (SIDBI) acts as the Implementation Partner for the scheme's administration, ensuring smooth coordination between Lending Institutions like Scheduled Commercial Banks, Non-Banking Financial Companies (NBFCs), and Micro-Finance Institutions (MFIs).

Additional Information

• Jal Shakti Abhiyan:

• Launched in 2019, this is a water conservation campaign focused on rainwater harvesting and groundwater recharge. It does not provide financial support to informal workers. Hence, this statement is incorrect.

• The campaign covers 256 water-stressed districts across India, promoting intensive afforestation and watershed development.

• PM Ujjwala Yojana (PMUY):

• Launched in May 2016 in Ballia, Uttar Pradesh, its primary goal is to provide clean cooking fuel (LPG) to women from Below Poverty Line (BPL) households. Hence, this statement is incorrect.

• It aims to protect the health of women and children by replacing unclean cooking fuels like coal and firewood with smoke-free LPG connections.

• PM-KISAN (Pradhan Mantri Kisan Samman Nidhi):

• Launched in February 2019 (retroactive from December 2018), it is a Central Sector Scheme that provides income support to all landholding farmer families in India. Hence, this statement is incorrect.

• Under the scheme, an amount of Rs. 6,000 per year is released in three equal installments of Rs. 2,000 directly into the bank accounts of the beneficiaries.

Important Points

• The informal sector in India accounts for a significant portion of the urban workforce. Street vendors, often referred to as thelewalas or rehri-patri walas, are vital to the urban economy, providing essential goods at affordable prices.

• Eligibility for PM-SVANidhi: The scheme is available to all street vendors engaged in vending in urban areas on or before March 24, 2020. This includes vendors from surrounding peri-urban or rural areas who vend within the city limits.

• Lending Institutions: The scheme leverages a wide network of lenders, including Regional Rural Banks (RRBs) and Cooperative Banks, to reach the last mile of the unorganized sector.

• Socio-economic profiling: Under the SVANidhi se Samriddhi program, the government also conducts socio-economic profiling of beneficiaries and their families to link them to other welfare schemes like PM Suraksha Bima Yojana and PM Jeevan Jyoti Bima Yojana.

**Q46. Answer: (d) 154**

Shortcut Trick

Total amount = (12×160) + (55×109) + (89×181)

=> = 1920 + 5995 + 16109 = 24024

Total members = 12 + 55 + 89 = 156

=> Average = 24024 ÷ 156 = 154

Therefore Answer = 154

Alternate Method

Given:

Group A: 12 members, avg = 160

Group B: 55 members, avg = 109

Group C: 89 members, avg = 181

Concept Used:

Overall Average = Total Amount ÷ Total Members

Calculation:

=> Total of A = 12 × 160 = 1920

=> Total of B = 55 × 109 = 5995

=> Total of C = 89 × 181 = 16109

=> Total amount = 1920 + 5995 + 16109 = 24024

=> Total members = 12 + 55 + 89 = 156

=> Average = 24024 ÷ 156 = 154

Therefore Overall average = 154

Additional Information

Average Formula: Average = Total Sum ÷ Number of items

Weighted Average: Used when groups have different sizes

Shortcut: Multiply each average by its frequency

Tip: Add totals first, divide once at end

**Q47. Answer: (b) 3**

Shortcut Trick

Use the Pacific-Atlantic Rule for significant figures:

1. If a decimal is Present, count from the Pacific (Left) side.

2. Skip all zeros until you hit the first non-zero digit.

3. Count every digit from that point until the end.

In 0.00200, we start counting at '2' and include the trailing zeros. Total = 3.

Therefore Answer = 3

Detailed Method

Concept of Significant Figures:

Significant figures represent the precision of a measurement. Every digit that is known with certainty plus one last digit that is somewhat uncertain is included.

Rules Applied to 0.00200:

• Rule 1 (Leading Zeros): Zeros to the left of the first non-zero digit (0.00) are never significant. They are simply placeholders to indicate the position of the decimal point.

• Rule 2 (Non-zero Digits): The digit '2' is non-zero, so it is significant.

• Rule 3 (Trailing Zeros with Decimal): Zeros at the end of a number are significant if a decimal point is present. These zeros ($...00$) indicate that the measurement was precise to that many decimal places.

0.00200Leading Zeros (Placeholders) Significant Figures→ 3 Sig Figs

Conclusion:

Number = $0.00200$

Significant digits = $2, 0, 0$

Total count = $3$

Therefore The number of significant figures present in 0.00200 is 3.

Additional Information

Scientific Notation Check

A foolproof way to find significant figures is to convert the number to scientific notation: 0.00200 = 2.00 × 10^(-3). All digits in the coefficient part ($2.00$) are significant.

Significant Figures in Calculations

When multiplying or dividing, the result should have the same number of significant figures as the measurement with the fewest significant figures.

**Q48. Answer: (c) 5 : 9**

Shortcut Trick

Compare fractions using benchmark values or division estimation.

3 ÷ 17 ≈ 0.17 (Much less than 0.5)

13 ÷ 67 ≈ 0.19 (Much less than 0.5)

10 ÷ 37 ≈ 0.27 (Much less than 0.5)

5 ÷ 9 ≈ 0.55 (More than 0.5)

Therefore Answer = 5 : 9

Alternate Method

Given:

Ratios are 3 : 17, 13 : 67, 10 : 37, and 5 : 9.

Formula used:

To compare ratios, convert them to equivalent decimals by dividing the antecedent by the consequent.

Ratio Comparison Chart 3 : 17 0.176 13 : 67 0.194 10 : 37 0.270 5 : 9 0.555 (Max) 0.0 1.0

Calculations:

=> 3 ÷ 17 ≈ 0.1764

=> 13 ÷ 67 ≈ 0.1940

=> 10 ÷ 37 ≈ 0.2702

=> 5 ÷ 9 ≈ 0.5555

=> Comparing values: 0.5555 > 0.2702 > 0.1940 > 0.1764

Therefore The correct answer is 5 : 9.

Additional Information

Cross-Multiplication Method

For two fractions a/b and c/d, if ad > bc, then a/b > c/d. This avoids division entirely for small numbers.

Benchmark Comparison

Compare fractions to standard values like 1/2, 1/3, or 1/4. Since 5/9 > 1/2 and all others are less than 1/2, 5/9 is automatically the largest.

Same Difference Rule

In proper fractions, if the difference between numerator and denominator is the same, the fraction with the largest values is the greatest.

Reciprocal Method

If a/b is hard to calculate, compare b/a. The fraction with the smallest reciprocal value is the largest original fraction.

**Q49. Answer: (b) Rigidity**

The correct answer is Rigidity.

Key Points

• Rigidity is the property of a substance to maintain its shape when an external force is applied. In solids, the constituent particles (atoms, ions, or molecules) are closely packed, leaving very little space between them. Hence, statement 2 is correct.

• Compressibility refers to the capacity of a substance to decrease in volume under pressure. Because particles in a solid are already in close proximity and have strong intermolecular forces, they possess negligible compressibility. Hence, statement 1 is incorrect.

• Transparency is an optical property that allows light to pass through a material without being scattered. While some solids like glass are transparent, many others like wood or iron are opaque; therefore, it is not a property possessed by solids solely due to the packing of particles. Hence, statement 3 is incorrect.

• Fluidity is the ability of a substance to flow, which is characteristic of liquids and gases. In solids, particles are held in fixed positions and can only vibrate about their mean positions, preventing them from flowing. Hence, statement 4 is incorrect.

• The strong intermolecular forces of attraction in solids keep the particles so tightly bound that they exhibit a definite shape and definite volume, which are the fundamental aspects of rigidity.

Additional Information

• Characteristics of Solids: Solids are characterized by high density, low kinetic energy of particles, and incompressibility. They do not expand to fill their container like gases do.

• Crystalline Solids: These solids have a long-range order with a regular repeating pattern of particles. Examples include Diamond, Quartz, and Sodium Chloride. They have sharp melting points.

• Amorphous Solids: Also known as pseudo-solids or super-cooled liquids, these lack a regular arrangement of particles. Examples include Glass, Rubber, and Plastic. They soften over a range of temperatures.

• Density and Packing: In a solid, the packing efficiency determines how much of the total space is occupied by particles. For instance, in a Face-Centered Cubic (FCC) structure, the packing efficiency is 74%, which is quite high compared to other states.

• Applications: The rigidity of solids is utilized in civil engineering for construction (using steel and concrete), in manufacturing for creating durable tools, and in aerospace for structural components that must withstand high mechanical stress.

Important Points

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• Kinetic Molecular Theory: According to this theory, the particles in a solid are in constant motion, but this motion is limited to vibrations because the potential energy of attraction is much greater than the kinetic energy of the particles.

• Diffusion: The process of diffusion (movement of particles from high to low concentration) is extremely slow in solids compared to liquids or gases because the intermolecular spaces are almost absent.

• Thermal Expansion: When a solid is heated, the vibrations of its particles increase, leading to a slight increase in volume known as thermal expansion. However, the rigidity remains until the melting point is reached.

• Elasticity vs. Rigidity: While rigidity is the resistance to change in shape, elasticity is the property of a solid to return to its original shape after the deforming force is removed (e.g., a steel spring).

**Q50. Answer: (c) &**

The logic followed here is:

Given: (Left) M K L $ F % G & # @ S ! S + ? K > H V G (Right)

Now, all letters are dropped and only symbols are kept.

So, first we remove all letters:

Remaining symbols: $ % & # @ ! + ? >

Now we rewrite the reduced series (left to right): $ % & # @ ! + ? >

Now, we need the 7th from the right: $ % & # @ ! + ? >

So, the 7th symbol from the right is &

Hence, the correct answer is Option 3.

**Q51. Answer: (c) 13**

Shortcut Trick

Apply BODMAS quickly:

=> 16 + 5 − 2 × 4 => 16 + 5 − 8

=> 21 − 8 => 13

Therefore Answer = 13

Alternate Method

Given:

16 + 20 ÷ 4 − 2 × 4

Concept Used:

BODMAS rule

Calculation:

16 + 20 ÷ 4 - 2 × 4

=> 16 + 5 − 2 × 4

=> 16 + 5 − 8

=> 21 − 8

=> 13

Therefore The correct answer is 13.

Additional Information

BODMAS Rule: Solve Division and Multiplication before Addition and Subtraction

Left to Right: Same priority operations are solved from left to right

Common Error: Adding before division leads to wrong answer

Speed Tip: Always simplify ÷ and × first

**Q52. Answer: (d) Siachen Glacier**

The correct answer is Siachen Glacier.

Key Points

• The Siachen Glacier is located in the Eastern Karakoram range in the Himalayan Mountains, at approximately 35.42°N 77.10°E.

• It is the longest glacier in the Karakoram Range and the second-longest in the world's non-polar regions, with a total length of about 76 kilometers (47 miles).

• The only glacier longer than Siachen outside the polar regions is the Fedchenko Glacier, which is 77 kilometers long and situated in the Pamir Mountains of Tajikistan.

• The Siachen Glacier lies just south of the great drainage divide that separates the Eurasian Plate from the Indian subcontinent.

• The altitude of the glacier ranges from approximately 5,753 meters (18,875 feet) above sea level at its head at Indira Col to

3,620 meters (11,875 feet) at its snout.

Additional Information

• Baltoro Glacier:

• Located in the Gilgit-Baltistan region of the Karakoram range.

• It has a length of 63 kilometers (39 miles) and is one of the longest glaciers outside the polar regions.

• It is a major source of the Shigar River, which is a tributary of the Indus River.

• It is famous for its proximity to four of the world's fourteen "eight-thousanders," including K2 (8,611 meters).

• Gangotri Glacier:

• Located in the Uttarkashi District of Uttarakhand, India, within the Garhwal Himalayas.

• It is one of the largest glaciers in the Himalayas with an estimated volume of over 27 cubic kilometers.

• The glacier is about 30 kilometers long and 2 to 4 kilometers wide.

• The snout of the glacier is known as Gaumukh, which is the source of the Bhagirathi River, one of the main headstreams of the Ganga.

• Pindari Glacier:

• Situated in the Kumaon region of the Himalayas in the Bageshwar district of Uttarakhand.

• This glacier has a length of roughly 3.2 kilometers and is the source of the Pindar River.

• It is a popular trekking destination in India due to its relatively easy accessibility compared to other Himalayan glaciers.

Important Points

• The Siachen Glacier is famously known as the highest battlefield in the world, where India and Pakistan have maintained a military presence since 1984.

• In April 1984, the Indian Army launched Operation Meghdoot, a military operation to seize control of the glacier, which was successful.

• The Nubra River originates from the snout of the Siachen Glacier and flows into the Shyok River.

• Administratively, the entire Siachen Glacier is part of the Union Territory of Ladakh in India since the reorganization of the state in October 2019.

• The Saltoro Ridge serves as a natural divide that separates the Siachen Glacier from Pakistan-occupied territory.

**Q53. Answer: (c) Task Manager**

The correct answer is Task Manager.

Key Points

• The Task Manager is a system monitor and startup manager utility included with Microsoft Windows systems that allows users to monitor processor utilization, memory usage, and network activity. Hence, the statement regarding Task Manager is correct.

• To view the total processor utilization across all cores, a user must navigate to the Performance tab within the Task Manager. This section provides real-time graphical data on the CPU (Central Processing Unit), showing the percentage of processing power currently being utilized.

• The utility allows users to see a single overall graph or right-click to change the view to "Logical processors," which displays the utilization of every individual core and thread in the system.

• It serves as a critical diagnostic tool for identifying applications or background processes that are consuming excessive resources, potentially slowing down the computer.

• The Task Manager can be quickly accessed by pressing the keyboard shortcut Ctrl + Shift + Esc or by right-clicking the Taskbar in most Windows versions.

Additional Information

• My Computer (This PC):

• This is a system folder and file management interface used to access drives like the C: Drive, D: Drive, and external storage devices.

• It provides information about disk space and file hierarchy but does not show real-time CPU utilization. Hence, this statement is incorrect.

• Settings:

• This is a universal app in Windows 10 and Windows 11 designed to replace the legacy Control Panel for configuring system preferences.

• While it contains "About" information showing the processor model and RAM capacity, it is not the primary tool for monitoring live utilization across all cores. Hence, this statement is incorrect.

• Recycle Bin:

• The Recycle Bin is a directory where deleted files are temporarily stored before being permanently removed from the hard drive.

• It has no function related to hardware monitoring or system performance tracking. Hence, this statement is incorrect.

Important Points

• History of Task Manager: It was significantly overhauled in Windows 8 and Windows 10, introducing a cleaner "Processes" tab that groups applications and background tasks separately for better management.

• Metrics Tracked: Beyond CPU, the Performance tab tracks GPU (Graphics Processing Unit) utilization, Disk Read/Write speeds, and Ethernet/Wi-Fi throughput.

• Process Management: If a software program becomes unresponsive, the Task Manager allows a user to "End Task," which forcefully terminates the process to free up system resources.

• Uptime: The utility also displays the System Uptime (in Days:Hours:Minutes:Seconds), which indicates how long the computer has been running since the last reboot or startup.

**Q54. Answer: (c) One**

Given: X, Y, Z, S, T and U live on six different floors of the same building.

The lowermost floor in the building is numbered 1, the floor above it, number 2 and so on till the topmost floor is numbered 6.

Only two people live between T and Y.

Only S lives above U.

Z lives on an even numbered floor.

T lives on the lowermost floor.

| Floor | Person |
|---|---|
| 6 | S |
| 5 | U |
| 4 | Y |
| 3 | X |
| 2 | Z |
| 1 | T |

Now, people between X and T: 1 person

Hence, the correct answer is Option 3.

**Q55. Answer: (d) L**

Given: J, K, L, R, S and T live on six different floors of the same building.

The lowermost floor in the building is numbered 1, the floor above it is numbered 2 and so on till the topmost floor is numbered 6.

Only three people live between R and S, where R lives below S.

J lives on an odd numbered floor and immediately above R.

L lives on one of the floors below K and on one of the floors above T.

| Floor | Person |
|---|---|
| 6 | S |
| 5 | K |
| 4 | L |
| 3 | J |
| 2 | R |
| 1 | T |

Now, person on Floor 4 = L

Hence, the correct answer is Option 4.

**Q56. Answer: (c) 94**

The logic followed here is:

thus, "94" will replace the question mark in the given series.

Hence, the correct option is "Option 3".

**Q57. Answer: (a) M.S. Subbulakshmi and T. Sadasivam**

The correct answer is M.S. Subbulakshmi and T. Sadasivam.

Key Points

• The biography titled "Sivam Subham: The Biography of a Couple" chronicles the intertwined lives of the legendary Carnatic vocalist M.S. Subbulakshmi and her husband, the freedom fighter and journalist T. Sadasivam.

• Highlighted in October 2025 current affairs, this book provides an in-depth look at how T. Sadasivam played a pivotal role in shaping the career of M.S. Subbulakshmi, moving beyond a standard biography to explore their spiritual and professional partnership.

• The book is authored by S. Janaki, a noted researcher and writer, who captures the essence of their life in Chennai and their contributions to Indian classical music and the Independence movement.

• It details the couple's immense philanthropic work, noting that they donated a significant portion of their lifetime earnings from concerts to various charitable causes, including hospitals and educational institutions.

• The narrative emphasizes T. Sadasivam’s role as a visionary who managed Subbulakshmi’s public persona, ensuring her music reached global audiences while maintaining the traditional roots of Carnatic music.

Additional Information

• M.S. Subbulakshmi (1916–2004):

• Born in Madurai, Tamil Nadu, she became the first musician ever to be awarded the Bharat Ratna, India's highest civilian honor, in 1998.

• In 1966, she became the first Indian musician to perform at the United Nations General Assembly, an event that brought international recognition to Indian classical music.

• She was the first Indian musician to receive the Ramon Magsaysay Award in 1974, often referred to as Asia's Nobel Prize, for her contribution to public service through music.

• T. Sadasivam (1902–1997):

• He was a leading freedom fighter and a close associate of C. Rajagopalachari. He co-founded the popular Tamil magazine Kalki in 1941.

• His management skills were legendary, as he successfully organized massive benefit concerts that raised millions of rupees for national and social causes.

• Significance of the Title:

• The title "Sivam Subham" is a play on their names—Sivam for Sadasivam and Subham representing the auspiciousness associated with Subbulakshmi.

• It symbolizes the harmony (Sruthi) that existed between them, which was essential for the preservation of cultural heritage in post-independence India.

Important Points

• Cultural Impact: The couple was instrumental in the Tamil Isai Movement, which promoted the singing of Tamil compositions in Carnatic concerts.

• Iconic Renditions: M.S. Subbulakshmi is world-renowned for her renditions of the Venkateswara Suprabhatam, Vishnu Sahasranamam, and Bhajans by Meera and Kabir, which remain staple recordings in Indian households.

• Acting Career: Before dedicating herself entirely to music, Subbulakshmi acted in several films, most notably Meera (1945), which was produced by Sadasivam and gained national acclaim.

• Historical Context: Their home in Madras (now Chennai) served as a meeting point for many political leaders and artists during the mid-20th century, making them central figures in India's socio-cultural history.

**Q58. Answer: (d) Pallavas**

The correct answer is Pallavas.

Key Points

• Vijayalaya was the founder of the Imperial Chola Empire in South India during the 9th century. He belonged to the ancient Chola family of Uraiyur, which had a glorious past during the Sangam Age but had later declined into a minor power.

• Before establishing an independent kingdom, Vijayalaya served as a feudatory (vassal) of the Pallavas of Kanchipuram. This relationship highlights the political structure of the era where smaller local chieftains owed allegiance to dominant regional powers like the Pallavas.

• Around the year 850 AD, Vijayalaya took advantage of the constant warfare between the Pallavas and the Pandyas. He defeated the Muttharaiyars, who were subordinates to the Pandya kings and controlled the Kaveri delta.

• After capturing Thanjavur from the Muttharaiyars, he established it as the capital of the rising Chola kingdom. He also constructed a magnificent temple dedicated to the goddess Nishumbhasudini (a form of Durga) in Thanjavur to commemorate his victory.

• His reign lasted from 850 AD to 871 AD, laying the essential groundwork for his successors, particularly Aditya I, to expand the

empire and eventually overthrow their Pallava overlords.

Additional Information

• Pallava Dynasty:

• The Pallavas ruled from Kanchipuram from the 3rd century to the 9th century AD.

• They were pioneers of Dravidian architecture, famously known for the rock-cut temples at Mahabalipuram and the Shore Temple.

• The Pallava power finally declined when the Chola ruler Aditya I defeated the last Pallava king, Aparajita, in 897 AD.

• Chalukya Dynasty:

• The Chalukyas were a major power in the Deccan region, with their capital at Badami (Vatapi).

• Pulakeshin II (610–642 AD) was their most famous ruler, known for defeating Harshavardhana on the banks of the Narmada River.

• They were persistent rivals of the Pallavas, often engaging in long-drawn conflicts over the fertile Raichur Doab.

• Western Ganga Dynasty:

• The Gangas ruled the southern part of modern-day Karnataka, a region known as Gangavadi, from the 4th to the 10th century.

• They often maintained their sovereignty by playing the role of a buffer state between the Pallavas, Chalukyas, and Rashtrakutas.

• They are well-known for the monolithic statue of Lord Bahubali (Gommateshwara) at Shravanabelagola, commissioned during the 10th century.

• Vakataka Dynasty:

• The Vakatakas were a powerful dynasty in the Deccan (modern Maharashtra and Madhya Pradesh) from the 3rd to 5th century AD.

• They were contemporaries of the Guptas and entered into matrimonial alliances with them (e.g., Prabhavatigupta).

• They were significant patrons of the Ajanta Caves, particularly during the reign of Harisena.

Important Points

• The Imperial Chola dynasty established by Vijayalaya reached its zenith under Rajaraja I (985–1014 AD) and Rajendra I (1014–1044 AD).

• Rajaraja I constructed the world-famous Brihadisvara Temple in Thanjavur around 1010 AD, which is a UNESCO World Heritage Site.

• The Cholas are celebrated for their highly efficient local self-government system, as evidenced by the Uttaramerur Inscription, and for their maritime expeditions to Sri Lanka and Southeast Asia (Srivijaya empire).

• The transition from a Pallava feudatory to an independent empire showcases the Cholas' strategic ability to exploit political vacuums in the medieval South Indian landscape.

**Q59. Answer: (a) MAR 27**

The logic followed here is:

So, 'MAR 27 ' will replace the question mark in the given series.

Hence, the correct answer is "Option 1".

**Q60. Answer: (c) 9**

Shortcut Trick

Sum of digits = 2+3+0+A+7+8+0+7 = 27 + A

=> For divisibility by 3 → sum must be multiple of 3

=> 27 is divisible by 3 => A must be divisible by 3

=> Max digit satisfying = 9

Therefore Answer = 9

Alternate Method

Given:

Number = 230A7807

Concept Used:

A number is divisible by 3 if sum of its digits is divisible by 3

Calculation:

=> Sum of digits = 2 + 3 + 0 + A + 7 + 8 + 0 + 7

=> = 27 + A

=> For divisibility by 3:

=> (27 + A) must be divisible by 3

=> 27 is already divisible by 3
=> So A must be divisible by 3
=> Possible values: 0, 3, 6, 9
=> Maximum value = 9
Therefore The correct answer is 9.
Additional Information
Divisibility Rule (3): Sum of digits divisible by 3
Digit Range: A can take values from 0 to 9
Shortcut: Ignore already divisible part and focus on variable digit
Tip: For maximum/minimum, always check boundary values

**Q61. Answer: (c) $x^2-10x+21=0$**

Shortcut Trick
Use Remainder Theorem:
=> f(2) = 5, f(4) = −3
=> Assume $f(x) = x^2 + bx + c$
=> Substitute: $4 + 2b + c = 5$ and $16 + 4b + c = -3$
=> Solve quickly => b = −10, c = 21
Therefore Answer: $x^2 - 10x + 21 = 0$
Alternate Method
Given:
$f(x) = x^2 + bx + c$
f(2) = 5, f(4) = −3
Concept Used:
Remainder Theorem → f(a) gives remainder when divided by (x − a)
Calculation:
=> $f(2) = 2^2 + 2b + c = 5$
=> $4 + 2b + c = 5$
=> $2b + c = 1$ ...(1)
=> $f(4) = 4^2 + 4b + c = -3$
=> $16 + 4b + c = -3$
=> $4b + c = -19$ ...(2)
=> Subtract (1) from (2):
=> $(4b + c) - (2b + c) = -19 - 1$
=> $2b = -20$ => $b = -10$
=> Put in (1):
=> $2(-10) + c = 1$
=> $-20 + c = 1$ => $c = 21$
=> $f(x) = x^2 - 10x + 21$
Therefore Required equation: $x^2 - 10x + 21 = 0$
Additional Information
Remainder Theorem: f(a) = remainder when divided by (x − a)
Quadratic Form: $ax^2 + bx + c$
Leading Coefficient: Here a = 1 simplifies calculation
Shortcut Tip: Form equations directly using given values

**Q62. Answer: (c) 256 : 196**

Shortcut Trick
Area ratio = (side ratio)²
=> $(16 : 14)^2 = 256 : 196$
Therefore Answer = 256 : 196
Alternate Method

Given:

Ratio of corresponding sides = 16 : 14

Concept Used:

For similar triangles, ratio of areas = square of ratio of sides

Calculation:

=> Area ratio = $(16 : 14)^2$

=> = $16^2 : 14^2$

=> = 256 : 196

Therefore Ratio of areas = 256 : 196

Additional Information

Similarity Rule: Corresponding sides are proportional

Area Relation: Area ratio = $(\text{Side ratio})^2$

Volume Extension: For 3D, volume ratio = $(\text{side ratio})^3$

Shortcut Tip: Always square the ratio directly

**Q63. Answer: (b) Bose Institute, Kolkata**

The correct answer is Bose Institute, Kolkata.

Key Points

• Scientists at the Bose Institute in Kolkata, India, developed GlowCas9, a bioluminescent CRISPR protein that illuminates during gene editing, allowing for real-time tracking.

• Led by Dr. Basudeb Maji and designed by researcher Arkadeep Karmakar, this tool fuses a Cas9 enzyme with a split nano-luciferase enzyme from deep-sea shrimp, which acts as a "molecular beacon" to show when gene repair is active.

• GlowCas9 is a novel bioluminescent CRISPR-Cas9 protein designed specifically to track gene editing processes in real-time within living cells and tissues.

• The primary function of GlowCas9 is to provide a visual signal whenever the Cas9 enzyme reaches its target DNA sequence, allowing researchers to monitor the efficiency and precision of the gene-editing event without the need for external light sources.

• Unlike traditional tracking methods that use fluorescence (requiring external lasers), GlowCas9 utilizes bioluminescence, which significantly reduces phototoxicity and improves the signal-to-noise ratio in deep-tissue imaging.

• This innovation is expected to revolutionize therapeutic applications by helping scientists identify and minimize off-target effects, which are a major concern in CRISPR-based gene therapy.

Additional Information

• CRISPR-Cas9 Technology:

• CRISPR stands for Clustered Regularly Interspaced Short Palindromic Repeats, a natural defense mechanism found in bacteria.

• The Cas9 protein acts as a pair of molecular scissors capable of cutting DNA at specific locations to add, remove, or alter genetic material.

• This technology was popularized after the Nobel Prize in Chemistry was awarded to Emmanuelle Charpentier and Jennifer Doudna in 2020.

• Bioluminescence vs. Fluorescence:

• Bioluminescence is the production of light through a chemical reaction (e.g., using luciferase enzymes), commonly seen in fireflies and marine organisms.

• Fluorescence requires the absorption of external light (excitation) to emit light, which can sometimes damage sensitive biological samples.

• Indian Institute of Science (IISc), Bangalore:

• Established in 1909 in Bangalore, Karnataka, with the support of Jamsetji Tata and the Maharaja of Mysore.

• It is consistently ranked as the top research institution in India and is recognized globally for its contributions to Science, Engineering, and Technology.

• Other Research Institutions:

• TIFR (Tata Institute of Fundamental Research), Mumbai: Founded in 1945 by Homi J. Bhabha, focusing on physics, biology, and mathematics.

• Bose Institute, Kolkata: Established in 1917 by Sir Jagadish Chandra Bose, it is one of India's oldest modern research institutes.

• IIT (Indian Institute of Technology), Delhi: Established in 1961, it is a premier engineering institute known for its innovation and incubation centers.

Important Points

• Applications of GlowCas9:

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• In Cancer Research: Tracking the delivery of gene-editing tools directly into tumor cells.

• In Genetic Disorders: Improving the safety of treatments for conditions like Sickle Cell Anemia and Thalassemia.

• In Drug Discovery: Serving as a high-throughput screening tool to observe cellular responses to new genomic drugs.

• Safety and Precision:

• The ability to track Cas9 helps in ensuring that the gene editing occurs only at the target site, reducing the risk of mutations elsewhere in the genome.

• The bioluminescent signal can be detected by highly sensitive CCD cameras, making it a non-invasive way to study genetic changes in living organisms over long periods.

**Q64. Answer: (b) Mud brick platforms**

The correct answer is Mud brick platforms.

Key Points

• The Citadel or the Acropolis was a distinct feature of the Harappan civilisation, typically located on the western side of the city. It was built on massive mud brick platforms to provide it with a significant elevation compared to the rest of the settlement. Hence, the statement regarding mud brick platforms is correct.

• This architectural design served a dual purpose: it provided protection against floods from rivers like the Indus and acted as a defensive fortification. The height physically separated the administrative and ritual centers from the Lower Town.

• Most of the important public buildings, such as the Great Bath in Mohenjo-daro and various Granaries, were located on this elevated Citadel. The platforms were made of millions of mud bricks, requiring a massive amount of labor and organization.

• While stone construction was used in specific sites like Dholavira in Gujarat, it was not the primary factor for the height of Citadels across most Harappan cities. In most major sites, mud bricks were the fundamental material for the elevated bases. Hence, the statement regarding stone construction is generally incorrect for height contribution.

• Wooden pillars were used for the superstructures or roofs of buildings but did not contribute to the foundational height of the Citadel itself. Hence, the statement regarding wooden pillars is incorrect.

• Adobe walls (sun-dried bricks) were used for constructing the walls of houses and fortifications, but the actual elevation of the entire zone was due to the artificial mud brick platforms. Hence, the statement regarding adobe walls is not the primary reason for the height.

Additional Information

• Town Planning: The Harappan Civilisation (also known as the Indus Valley Civilisation), dating from approximately 2600 BCE to 1900 BCE, is famous for its advanced urban planning. Cities were divided into the Citadel (for the elite/administration) and the Lower Town (for commoners and craftsmen).

• Geographic Location: The civilisation spanned across modern-day India (Punjab, Rajasthan, Gujarat, Haryana) and Pakistan (Sindh, Punjab, Balochistan). Key sites include Harappa, Mohenjo-daro, Kalibangan, and Lothal.

• Brick Standardization: One of the most remarkable features was the use of standardized bricks. Whether sun-dried (mud bricks) or baked (burnt bricks), they followed a strict ratio of 4:2:1 in terms of length, breadth, and height.

• The Great Bath: Located on the Citadel at Mohenjo-daro, this was a large rectangular tank used for ritual bathing. It was made watertight with a layer of natural bitumen (tar), showcasing advanced engineering skills.

• Granaries: Huge structures used for storing surplus food grains like wheat and barley were found on the Citadels, indicating a centralized tax or grain collection system.

Important Points

• Social Stratification: The physical elevation of the Citadel on mud brick platforms suggests a clear social hierarchy, where the ruling class lived apart from the general population.

• Labor Organization: The construction of these platforms involved millions of man-hours. Archaeologists estimate that to build the platforms at Harappa alone, thousands of laborers would have worked for months, implying a powerful centralized authority.

• Drainage System: While the Citadel was raised, the Lower Town featured the world's first sophisticated underground drainage system. Every house was connected to street drains lined with bricks or stone slabs.

• Discovery: The first Harappan site was discovered in 1921 by Daya Ram Sahni under the guidance of Sir John Marshall. Mohenjo-daro was subsequently excavated by R.D. Banerji in 1922.

• Decline: The civilization began to decline around 1900 BCE due to various factors including climate change, flooding, or the drying up of the Saraswati River.

**Q65. Answer: (b) 10**

Shortcut Trick

=> Let speeds be v and v−2

=> Average speed = (2×v(v−2)) / (2v−2) = 4.8

=> Try nearby values → v = 6 works

=> Speeds = 6 and 4
Therefore Answer = 10
Alternate Method
Given:
Morning speed = v
Afternoon speed = v − 2
Average speed = 4.8 km/h
Formula:
Average speed (equal distance) = (2ab)/(a + b)
Calculation:
=> 4.8 = (2 × v × (v − 2)) / (v + v − 2)
=> 4.8 = (2v(v − 2)) / (2v − 2)
=> 4.8(2v − 2) = 2v(v − 2)
=> 9.6v − 9.6 = 2v² − 4v
=> 2v² − 13.6v + 9.6 = 0
=> Divide by 2 => v² − 6.8v + 4.8 = 0
=> v = 6 (valid)
=> Speeds = 6 and 4
=> Sum = 6 + 4 = 10
Final Answer: 10
Additional Information
1. Average Speed: For equal distances → (2ab)/(a+b)
2. Harmonic Mean: Used in speed problems
3. Trial Method: Useful for quick solving
4. Speed Relation: If one decreases, average is less than arithmetic mean

**Q66. Answer: (d) Rs. 4840**

Shortcut Trick
=> 8 parts = 23000 => 1 part = 2875
=> X:Y:Z = 25875 : 11500 : 23000
=> X effective = 25875×6 + 12937.5×6 = 232875
=> Ratio X:Y:Z = 232875 : 138000 : 276000 = 621 : 368 : 736
=> Difference (X−Y) = 253 parts => (253/1725)×33000 = 4840
Therefore Answer = 4840
Alternate Method
Given:
Investment ratio (X : Y : Z) = 9 : 4 : 8
Z's investment = 23000
Total profit = 33000
X withdraws half after 6 months
Formula Used:
Profit prop. to Capital × Time
Calculation:
=> 8x = 23000
=> x = 2875
=> X = 9x = 25875
=> Y = 4x = 11500
=> X for 6 months = 25875 × 6
=> Remaining = 25875/2 = 12937.5
=> X for next 6 months = 12937.5 × 6
=> Total X = 155250 + 77625 = 232875
=> Y total = 11500 × 12 = 138000

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=> Z total = 23000 × 12 = 276000
=> Ratio = 232875 : 138000 : 276000
=> Divide by 375
=> = 621 : 368 : 736
=> Total parts = 621 + 368 + 736 = 1725
=> X's profit = (621/1725) × 33000 = 11880
=> Y's profit = (368/1725) × 33000 = 7040
=> Difference = 11880 − 7040 = 4840
Final Answer: 4840
Additional Information
1. Partnership Rule: Profit prop. to Capital × Time
2. Withdrawal Effect: Reduces effective capital
3. Ratio Simplification: Divide by common factor
4. Profit Difference: (difference/total parts) × total profit

**Q67. Answer: (c) = FPX % = WGO**

The logic followed here is:
For, MWE → WGO
Now, applying the same logic: PZH
Using the same shift pattern:
Now checking options:
Option 1) # = FPX, % = WGP → % does not match WGO
Option 2) # = FPX, % = WHO → does not match
Option 3) # = FPX, % = WGO → both match correctly
Option 4) # = YPX, % = WGO → # does not match FPX
Hence, the correct answer is Option 3.

**Q68. Answer: (d) 42 km to the South**

Given:
Dinesh starts from A → 46 km West
He turns left → 25 km South
He turns left → 35 km East
He turns left → 67 km North
He turns right → 11 km East and reaches P
So, point P is 42 km South from point A,.
Hence, the correct answer is Option 4.

**Q69. Answer: (d) 2**

The logic followed here is:
Given: A, B, C, D, E, F and G are sitting around a circular table facing the centre.
F sits to the immediate right of E.
Only two people sit between G and F when counted from the right of G.
Only three people sit between D and E when counted from the right of E.
A sits to the immediate right of B.
So, the people between G and B are: 2 people
Hence, the correct answer is Option 4.

**Q70. Answer: (a) Tropical evergreen forests**

The correct answer is Tropical evergreen forests.
Key Points
• Tropical evergreen forests are found in regions receiving heavy rainfall of more than 200 cm with a short dry season. Because of the high heat and humidity, these forests do not have a specific time to shed their leaves, making them appear green all year round. Hence, this option is correct.

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• These forests are highly stratified, meaning they have layers of vegetation starting from shrubs and creepers at the bottom to tall trees reaching heights of 60 meters or above.

• In India, these forests are predominantly located on the western slopes of the Western Ghats, the island groups of Lakshadweep, Andaman and Nicobar Islands, and the upper parts of Assam and the Tamil Nadu coast.

• The flora of these forests include commercially important trees such as Ebony, Mahogany, Rosewood, Rubber, and Cinchona.

• Common fauna found in these regions include elephants, monkeys, lemurs, and deer, while the jungles of Assam and West Bengal are famous for the one-horned rhinoceros.

Additional Information

• Tropical Thorn Forests:

• These are found in regions with less than 70 cm of rainfall. The vegetation consists of thorny trees and bushes like Acacias, Palms, Euphorbias, and Cacti.

• They are common in the semi-arid areas of Northwest India, including Gujarat, Rajasthan, Madhya Pradesh, and Haryana. Hence, this option is incorrect.

• Dry Deciduous Forests:

• These forests occur in areas having rainfall between 70 cm and 100 cm. They shed their leaves for about 6 to 8 weeks during the dry summer to conserve moisture.

• They are found in the rainier parts of the Peninsular plateau and the plains of Bihar and Uttar Pradesh. Hence, this option is incorrect.

• Montane Pine Forests:

• Found in mountainous areas, specifically at altitudes between 1500 and 3000 meters. These forests contain coniferous trees like Pine, Deodar, Silver Fir, and Cedar.

• In India, they cover the southern slopes of the Himalayas and parts of Northeast India. Hence, this option is incorrect.

Important Points

• Climatic Conditions: Tropical evergreen forests require an average annual temperature of about 22 degrees Celsius and high humidity levels.

• Soil Type: The soil in these regions is often laterite, which is acidic and low in nutrients because the heavy rainfall leaches away the minerals, yet the rapid decomposition of organic matter supports lush growth.

• Economic Significance: While the wood is extremely hard and heavy, making it difficult to transport and use commercially compared to deciduous forests, it is vital for biodiversity and maintaining the water cycle.

• Conservation Status: These forests are under threat due to deforestation for palm oil plantations, mining, and infrastructure development, particularly in Southeast Asian countries and the Amazon Basin.

**Q71. Answer: (a) T**

Given: X, Y, Z, S, T and U live on six different floors of the same building.

The lowermost floor in the building is numbered 1, the floor above it is numbered 2, and so on till the topmost floor is numbered 6.

U lives on floor number 4.

Only two people live between U and Z.

Only T lives between U and Y.

X lives immediately below U.

| Floor | Person |
|---|---|
| 6 | Y |
| 5 | T |
| 4 | U |
| 3 | X |
| 2 | S |
| 1 | Z |

Now, person on Floor 5 = T

Hence, the correct answer is Option 1.

**Q72. Answer: (c) Consistency**

The correct answer is Consistency.

Key Points

• Consistency is a fundamental characteristic of a computer that ensures that given the same set of input data and the same set of instructions, the computer will always produce identical results. This reliability is crucial for scientific calculations, financial accounting, and software development. Hence, statement 3 is correct.

• Mobility refers to the physical attribute of a computer system that allows it to be portable or moved from one location to another easily. Devices like laptops, tablets, and smartphones exemplify this trait, but it does not relate to the logic of data processing. Hence, statement 1 is incorrect.

• Expansion refers to the ability of a computer architecture to accommodate additional hardware components or peripherals to increase its functionality. This includes adding more RAM, Graphics Cards, or external storage via USB or PCIe slots. Hence, statement 2 is incorrect.

• Flexibility, often called versatility, describes the computer's capability to perform completely different types of work. For example, the same machine can be used to write a document, play music, edit video, or manage a database. While it makes the machine multi-purpose, it is not the term for ensuring identical outputs for identical inputs. Hence, statement 4 is incorrect.

Additional Information

• Speed: Computers operate at incredible speeds, far surpassing human capabilities. They can process millions of instructions per second (MIPS). The time unit for these operations is typically measured in microseconds (10^-^6), nanoseconds (10^-^9), or even picoseconds (10^-12).

• Accuracy: In addition to being fast, computers are extremely accurate. The degree of accuracy depends on the design of the computer. If the programming and input are correct, the results will be 100% accurate. Most errors are human-driven rather than machine-driven.

• Storage Capacity: Computers can store vast amounts of data in very small physical spaces. Primary storage (like RAM) holds data currently in use, while Secondary storage (like Hard Disk Drives, Solid State Drives, and Optical Discs) can store terabytes of information for long-term use.

• Diligence: Unlike human beings, a computer is free from monotony, tiredness, and lack of concentration. It can work for 24 hours a day, 365 days a year without any decrease in performance or precision.

Important Points

• GIGO (Garbage In, Garbage Out): This is a core principle of computing. It states that the quality of output is determined by the quality of input. If invalid data is entered, the consistent computer will produce an invalid result, highlighting that consistency does not automatically mean correctness if the user makes a mistake.

• Automation: Once a program is loaded into the memory, the computer can execute the instructions automatically without human intervention until the task is completed.

• No I.Q. (Intelligence Quotient): A computer is a machine and has no intelligence of its own. It cannot take independent decisions and only follows the algorithms and logic provided by the programmer.

• Power of Remembering: A computer has the ability to store and recall any amount of information because of its secondary storage. Information can be retrieved instantly even after many years, provided the storage media remains intact.

**Q73. Answer: (c) 12%**

Shortcut Trick

=> 4P => Interest = 3P

=> Time = 25 years

=> Rate = (100 × 3) / 25 = 12%

Therefore Answer = 12%

Alternate Method

Given:

Amount = 4P

Time = 25 years

Formula:

SI = (P × R × T) / 100

Amount = P + SI

Calculation:

=> SI = 4P − P = 3P

=> 3P = (P × R × 25) / 100

=> Cancel P

=> 3 = (25R) / 100

=> R = (3 × 100) / 25 = 12%

Final Answer: 12%

Additional Information

1. Simple Interest: SI = (P×R×T)/100
2. Amount: A = P + SI
3. Shortcut: If amount = nP => SI = (n−1)P
4. Direct Formula: R = (100 × SI/P) / T

**Q74. Answer: (d) Brother's daughter**

Family Chart:

Decoding the Symbols:

| Symbol | • | − | × | % | # |
|---|---|---|---|---|---|
| Meaning | Mother | Brother | Wife | Father | Daughter |

Given: G # P − L # C + D

It means: G is the daughter of P, P is the brother of L, L is the daughter of C, C is the mother of D.

So, G is brother's daughter of D

Hence, the correct answer is "Option 4".

**Q75. Answer: (b) 8**

Given:

OMIT → 4295

TIME → 2458

Hence, code for E = 8

Hence, the correct answer is "Option 2".

**Q76. Answer: (a) (3, −2, 1)**

Shortcut Trick

=> From (1): z = 2 − x − y

=> Substitute in others and simplify quickly

=> Solve → x = 3, y = −2

=> z = 2 − 3 + 2 = 1

Therefore Answer = (3, −2, 1)

Alternate Method

Given:

x + y + z = 2 ...(1)

6x − 4y + 5z = 31 ...(2)

5x + 2y + 2z = 13 ...(3)

Formula:

Use substitution method

Calculation:

=> From (1): z = 2 − x − y

=> Put in (2):

6x − 4y + 5(2 − x − y) = 31

=> 6x − 4y + 10 − 5x − 5y = 31

=> x − 9y = 21 ...(4)

=> Put in (3):

5x + 2y + 2(2 − x − y) = 13

=> 5x + 2y + 4 − 2x − 2y = 13

=> 3x = 9 => x = 3

=> Put x = 3 in (4):

3 − 9y = 21

=> −9y = 18 => y = −2

=> z = 2 − 3 − (−2) = 1

Final Answer: (3, −2, 1)

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Additional Information

1. Substitution Method: Express one variable and substitute
2. Elimination: Reduce variables step by step
3. Linear Equations: Solve systematically
4. Check: Always verify in original equations

**Q77. Answer: (c) 67**

BODMAS Table:

Given equation: 25 ÷ 2 + 12 × 4 − 7 = ? + 13

Now, replacing the symbols as given '+ ↔ −' and '× ↔ ÷', then:

=> 25 × 2 − 12 ÷ 4 + 7 = ? − 13

=> (25 × 2) − (12 ÷ 4) + 7 = ? − 13

=> 50 − 3 + 7 = ? − 13

=> 47 + 7 = ? − 13

=> 54 = ? − 13

=> ? = 54 + 13

=> ? = 67

Hence, the correct answer is "Option 3".

**Q78. Answer: (b) Nagabhata I**

The correct answer is Nagabhata I.

Key Points

• Nagabhata I (reign 730–760 CE) was the founder of the imperial Gurjara-Pratihara dynasty and is best known for his successful resistance against Arab invasions from the west.

• He effectively checked the expansion of the Umayyad Caliphate into India. According to the Gwalior inscription of Mihira Bhoja, Nagabhata I defeated a large Arab army led by the governors of Sindh (likely under Junaid ibn Abd al-Rahman al-Murri). Hence, the statement regarding Nagabhata I is correct.

• His victory prevented the Arabs from advancing beyond Sindh into Malwa and Gujarat, earning him a reputation as a protector of Sanatana Dharma.

• Nagabhata I established his control over Ujjain and laid the foundation for a dynasty that would eventually dominate Northern India for over three centuries.

• In contrast, Ramabhadra (reign 833–836 CE) was a relatively weak ruler who could not maintain the vast empire inherited from Nagabhata II, leading to temporary territorial losses. Hence, the statement regarding Ramabhadra is incorrect.

Additional Information

• Mihira Bhoja (836–885 CE):

• He was the most powerful and celebrated ruler of the Gurjara-Pratihara dynasty. Under his leadership, the empire reached its zenith, stretching from the Sutlej River in the northwest to the Narmada River in the south.

• He was a devotee of Lord Vishnu and adopted the title Adivaraha, which is found inscribed on his silver coins.

• The Arab traveler Al-Masudi referred to the Pratihara king as Baura (a corruption of Adivaraha), noting his great military strength and hostility toward the Arabs.

• Yasovarman I:

• He was a notable ruler of Kannauj in the early 8th century (roughly 725–752 CE). While he also fought against Arab incursions and forged an alliance with Lalitaditya Muktapida of Kashmir, he belonged to a different lineage and was eventually defeated by Lalitaditya.

• Tripartite Struggle:

• The Gurjara-Pratiharas were constantly involved in the Tripartite Struggle for the control of Kannauj.

• This struggle involved three major powers: the Pratiharas of the west, the Palas of Bengal, and the Rashtrakutas of the Deccan.

• The Pratiharas eventually emerged as the dominant force in Kannauj during the reign of Nagabhata II in 816 CE.

Important Points

• Administrative Features: The Gurjara-Pratihara administration was feudal in nature. The empire was divided into Bhuktis (provinces) and Vishayas (districts). Local governance was often handled by Samantas (vassals).

• Art and Architecture: They were great patrons of temple architecture. Notable examples include the Teli ka Mandir in Gwalior Fort and the temples at Osian in Rajasthan. Their style is characterized by elaborate carvings and the Nagara school of architecture.

• Literature: The famous poet and dramatist Rajasekhara lived in the court of Mahendrapala I and Mahipala I. He authored works

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like Karpuramanjari, Kavyamimamsa, and Balabharata.

• Decline: The dynasty began to decline in the 10th century due to repeated invasions by the Rashtrakuta king Indra III and later by Mahmud of Ghazni in 1018 CE, which eventually led to the rise of smaller Rajput clans like the Chandelas and Chahamanas.

**Q79. Answer: (d) Birju Maharaj**

The correct answer is Birju Maharaj.

Key Points

• Pandit Birju Maharaj was one of India's most celebrated Kathak dancers and belonged to the renowned Lucknow Gharana.

• He was honoured with the Padma Vibhushan, India's second-highest civilian award, in 1986 for his outstanding contribution to Indian classical dance.

• Birju Maharaj was known for his exceptional mastery of Kathak, abhinaya (expression), choreography, and music composition.

• He also choreographed dance sequences for several Indian films and played a key role in popularising Kathak across the world.

• Hence, the correct answer is Option 4 – Birju Maharaj.

Additional Information

• Mallika Sarabhai:

• A renowned exponent of Bharatanatyam and Kuchipudi.

• She has received several national and international honours but has not been awarded the Padma Vibhushan.

• Geeta Chandran:

• A distinguished Bharatanatyam dancer, teacher, and choreographer.

• She has received several prestigious awards but has not been conferred the Padma Vibhushan.

• Shovana Narayan:

• A noted Kathak dancer associated with the Jaipur and Lucknow gharanas.

• She received the Padma Shri (1992) and the Padma Bhushan (2005), but not the Padma Vibhushan.

Important Points

• Correct Answer: Birju Maharaj.

• Dance Form: Kathak (Lucknow Gharana).

• Padma Vibhushan Awarded: 1986.

• Padma Vibhushan: India's second-highest civilian award.

**Q80. Answer: (c) 158**

The logic followed here is:

Logic: Second number = (Number × 5) − 2

51 → 253

=> 51 × 5 = 255

=> 255 − 2 = 253

38 → 188

=> 38 × 5 = 190

=> 190 − 2 = 188

Now, applying the same logic:

32 → 32 × 5 = 160

=> 160 − 2 = 158

Now, checking options:

Option 1) 154 → not matching

Option 2) 152 → not matching

Option 3) 158 → matches

Option 4) 156 → not matching

Hence, the correct answer is Option 3.

**Q81. Answer: (b) 7√2 units**

Shortcut Trick

=> angle C = 90°, angle A = 45° => angle B = 45°

=> Triangle is 45°–45°–90°

=> AC is one leg = 7

=> Hypotenuse = side × √2 = 7√2
Therefore Answer = 7√2
Alternate Method
Given:
angle C = 90°, angle A = 45°
AC = 7 (adjacent to angle A)
Formula:
cosθ = adjacent / hypotenuse
C (90°) A B AC = 7
Calculation:
=> cos45° = AC / AB
=> 1/√2 = 7 / AB
=> AB = 7√2
Final Answer: 7√2
Additional Information
1. Angle Sum: Triangle angles sum = 180°
2. Special Case: If one angle = 90° and one = 45°, third = 45°
3. Ratio: 45°–45°–90° => 1 : 1 : √2
4. Trigonometry: cos45° = 1/√2

**Q82. Answer: (c) Both statements I and II together (and not statement I alone or statement II alone) are sufficient to answe...**

Given:
Arjun, Kunal, Mohit, Prateek, and Saurav each have different heights. We need to find who is the tallest.
Now,
Statement (I):
Mohit is taller than Arjun and Kunal but shorter than Prateek.
=> Arjun, Kunal < Mohit < Prateek
But relation of Saurav with others is not given
=> Tallest cannot be identified
=> Statement I alone is not sufficient
Statement (II):
Saurav is taller than Mohit but shorter than Prateek
=> Mohit < Saurav < Prateek
But relation of Arjun and Kunal is not given
=> Tallest cannot be identified
=> Statement II alone is not sufficient
Now, combining (I) and (II):
From (I): Arjun, Kunal < Mohit < Prateek
From (II): Mohit < Saurav < Prateek
So, overall order:
Arjun, Kunal < Mohit < Saurav < Prateek
Thus, Prateek is the tallest.
Here, both statements together are sufficient.
Hence, the correct answer is "Option 3".

**Q83. Answer: (d) 1985**

The correct answer is 1985.
Key Points
• The 52nd Amendment Act was passed by the Parliament of India in the year 1985 to address the issue of political defections. Hence, the statement regarding 1985 is correct.
• The act introduced what is popularly known as the Anti-Defection Law, which was designed to provide stability to the government by preventing elected representatives (MPs and MLAs) from changing parties frequently for personal or political gain.

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• Through this amendment, the Tenth Schedule was added to the Constitution of India, detailing the grounds and process for disqualification of legislators.

• The amendment amended Articles 101, 102, 190, and 191 of the Constitution to include provisions related to vacation of seats and disqualification on the grounds of defection.

• The primary objective was to curb the "Aaya Ram Gaya Ram" culture in Indian politics, which refers to the frequent floor-crossing by legislators that often led to the collapse of stable governments.

Additional Information

• Provisions for Disqualification: A member of a House belonging to any political party becomes disqualified if they voluntarily give up their membership or vote (or abstain from voting) contrary to the directions issued by their party (the Whip) without prior permission.

• Independent and Nominated Members: An independent member becomes disqualified if they join any political party after the election. A nominated member is disqualified if they join a political party after six months from the date they take their seat.

• The 91st Amendment Act, 2003: This amendment strengthened the Anti-Defection Law by removing the provision that protected a "split" (where one-third of members left). Now, at least two-thirds of the members of a party must agree to a "merger" with another party to avoid disqualification.

• Role of the Presiding Officer: The decision on disqualification is taken by the Speaker (in the Lok Sabha or Legislative Assembly) or the Chairman (in the Rajya Sabha or Legislative Council). Their decision was initially final, but the Supreme Court in the Kihoto Hollohan case (1992) ruled that the decision is subject to judicial review.

Important Points

• 1990 (Option 1): This year is significant in the history of electoral reforms as the Dinesh Goswami Committee submitted its report on Electoral Reforms, which suggested changes to the Anti-Defection Law, but it is not the year the 52nd Amendment was passed. Hence, this statement is incorrect.

• 1975 (Option 2): This year is known for the imposition of the National Emergency by Indira Gandhi. Several major amendments like the 38th and 39th Amendment Acts were passed in 1975, but the Anti-Defection Law did not exist then. Hence, this statement is incorrect.

• 1980 (Option 3): In 1980, the Supreme Court delivered its landmark judgment in the Minerva Mills case, which strengthened the Basic Structure Doctrine of the Constitution. However, no Anti-Defection legislation was enacted in this year. Hence, this statement is incorrect.

• Numerical Fact: Under the 91st Amendment (2003), the total number of ministers, including the Prime Minister, in the Council of Ministers shall not exceed 15% of the total strength of the Lok Sabha.

**Q84. Answer: (d) = OTU % = TYZ**

The logic followed here is:

Option 1) # = OTL, % = TPZ

For # (OTL) to JOP

For YDE to % (TPZ)

Since, the patterns do not match, Option 1 is incorrect.

Option 2) # = TOU, % = TZY

For # (TOU) to JOP

For YDE to % (TZY)

Since, the patterns do not match, Option 2 is incorrect.

Option 3) # = OTT, % = TTZ

For # (OTT) to JOP

For YDE to % (TTZ)

Since, the patterns do not match, Option 3 is incorrect.

Option 4) # = OTU, % = TYZ

For # (OTU) to JOP

For YDE to % (TYZ)

Since, both transformations follow a consistent shift pattern of −5 for each letter, Option 4 is correct.

Hence, the correct answer is "Option 4".

**Q85. Answer: (a) Two**

The logic followed here is:

Given: (Left) W 5 $ D % 9 R Q 2 8 @ F # 6 P 3 V & L 4 K ^ U (Right)

Now, we need symbols which are immediately preceded by a letter and also immediately followed by a number.

So, Needed pattern is: Letter - Symbol - Number
(Left) W 5 $ D % 9 R Q 2 8 @ F # 6 P 3 V & L 4 K ^ U (Right)
Now, Total = 2 symbols
Hence, the correct answer is Option 1.

**Q86. Answer: (c) 68.3%**

Shortcut Trick
Use 100 base:
=> Loss 15% => CP = 100, SP = 85
=> SP = 3/11 MP => 85 = 3/11 MP => MP = (85 × 11) ÷ 3
=> New SP = 54% MP = 0.54 × (85 × 11 ÷ 3)
=> SP = 168.3, CP = 100
=> Profit = 68.3%
Therefore Answer ≈ 68.3%
Alternate Method
Given:
SP = (3 ÷ 11) MP
Loss = 15%
Concept Used:
Loss% = [(CP − SP) ÷ CP] × 100
Calculation:
=> Let MP = 11
=> SP = 3
=> Loss = 15%
=> SP = 85% of CP
=> 3 = 0.85 CP
=> CP = 3 ÷ 0.85 = 60 ÷ 17
=> New SP = 54% of MP
=> = 0.54 × 11 = 5.94
=> Profit% = [(SP − CP) ÷ CP] × 100
=> = [(5.94 − (60 ÷ 17)) ÷ (60 ÷ 17)] × 100
=> ≈ 68.3%
Therefore Profit ≈ 68.3%
Additional Information
Loss Formula: SP = CP × (1 − Loss%)
Profit Formula: Profit% = (Profit ÷ CP) × 100
Ratio Trick: Assume convenient base (100) for percentage problems
Shortcut Tip: Convert fractions and percentages into simple numbers

**Q87. Answer: (d) 6**

Shortcut Trick
(x+y):(y+z):(z+x) = 6:7:8
=> Total = 6+7+8 = 21
=> x+y+z = half of total parts = 21k ÷ 2 = 14
=> k = 4 ÷ 3
=> z = [(y+z)+(z+x)−(x+y)] ÷ 2 = (7k+8k−6k)÷2 = 9k÷2
=> z = (9×4/3)÷2 = 6
Therefore Answer = 6
Alternate Method
Given:
(x+y):(y+z):(z+x) = 6:7:8
x + y + z = 14

Concept Used:

Let (x+y)=6k, (y+z)=7k, (z+x)=8k

Calculation:

=> Add all:

=> (x+y)+(y+z)+(z+x) = 6k+7k+8k = 21k

=> 2(x+y+z) = 21k

=> 2(14) = 21k

=> 28 = 21k => k = 4 ÷ 3

=> z = [(y+z)+(z+x)−(x+y)] ÷ 2

=> = (7k + 8k − 6k) ÷ 2

=> = 9k ÷ 2

=> = 9 × (4 ÷ 3) ÷ 2

=> = 12 ÷ 2 = 6

Therefore z = 6

Additional Information

Pair Sum Trick: z = [(y+z)+(z+x)−(x+y)] ÷ 2

Key Identity: (x+y)+(y+z)+(z+x) = 2(x+y+z)

Ratio Method: Convert ratios into variables using k

Shortcut Tip: Always use subtraction method to isolate variable

**Q88. Answer: (c) ***

The logic followed here is:

Given: (Left) E % Y & T 2 K 4 # 5 C * 6 S D $ 3 7 R @ G (Right)

Now, we drop all numbers and keep only letters and symbols.

So, removing 2, 4, 5, 6, 3, 7:

Remaining series becomes: E % Y & T K # C * S D $ R @ G

Now, we need the 7th from the right: E % Y & T K # C * S D $ R @ G

So, the 7th from the right is *

Hence, the correct answer is Option 3.

**Q89. Answer: (b) Hanoi**

The correct answer is Hanoi.

Key Points

• Hanoi, Vietnam, hosted the signing of the first UN Convention against Cybercrime on October 25-26, 2025, where 72 nations signed the treaty.

• This historic event aimed to establish a universal legal framework to combat rising global digital threats, with the treaty officially nicknamed the "Hanoi Convention".

• This convention represents the first global legally binding instrument designed to address the escalating threat of cybercrime. It was drafted by an Ad Hoc Committee established by the UN General Assembly. Hence, the statement regarding the framework being universal and legal is correct.

• The agreement was reached by consensus among the 193 member states of the United Nations. The mention of 72 nations often refers to the initial group of sponsors or the significant bloc of countries that pushed for the final adoption of the draft after years of intense negotiations. Hence, the statement regarding the signing/consensus of nations is correct.

• The framework aims to strengthen international cooperation, specifically in the areas of sharing electronic evidence, joint investigations, and technical assistance to combat crimes such as child sexual abuse material (CSAM) and money laundering. Hence, the statement about the threat of cybercrime is correct.

• The treaty provides a comprehensive structure for capacity building, ensuring that developing countries have the necessary tools and legal standing to request assistance from more technologically advanced nations.

Additional Information

• Background of the Convention: The process began in December 2019 following the adoption of General Assembly Resolution 74/247. The Ad Hoc Committee was tasked with elaborating a comprehensive international convention on countering the use of ICTs (Information and Communications Technologies) for criminal purposes.

• Comparison with Budapest Convention: Prior to this UN treaty, the Budapest Convention (2001), initiated by the Council of Europe, was the primary international treaty. However, it was not universal as many nations, including India, Russia, and China, were not parties to it due to concerns over sovereignty and data access.

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• Scope of Crimes: The new UN Convention covers a wide array of offenses, ranging from cyber-dependent crimes (like hacking and malware distribution) to cyber-enabled crimes (such as online fraud and the exploitation of minors).

• Controversies and Human Rights: During the sessions in New York and Vienna, human rights organizations expressed concerns that the treaty's broad language could be used by governments to justify surveillance or suppress dissent. The final draft includes safeguards to ensure that international human rights law is respected.

• Implementation Agency: The United Nations Office on Drugs and Crime (UNODC), which is headquartered in Vienna, Austria, serves as the secretariat for the convention and will play a lead role in its implementation and global monitoring.

Important Points

• Ratification Process: For the convention to enter into force, it must be ratified by at least 40 member states. The signing process initiated in New York is the first step before national legislatures formally adopt the treaty.

• Digital Sovereignty: The treaty emphasizes the principle of sovereign equality, meaning that countries must respect the territorial integrity and political independence of others while conducting cross-border cyber investigations.

• Timeline: The Ad Hoc Committee held its concluding session from July 29 to August 9, 2024. The consensus reached on August 8 is viewed as a landmark achievement in digital diplomacy.

• Signatory Nations: While the UN has 193 members, the "72 nations" figure specifically highlights the broad cross-regional support the draft received during its final push, bridging gaps between Western nations and the Global South.

**Q90. Answer: (b) Speed**

The correct answer is Speed.

Key Points

• Speed is the most prominent characteristic of a computer, as it can process millions of instructions in a fraction of a second. This allows for complex mathematical calculations and data processing tasks that would take humans years to complete.

• The speed of a computer is measured in different units depending on the type of system; for microcomputers, it is typically measured in Gigahertz (GHz), representing billions of clock cycles per second.

• For high-performance systems and supercomputers, speed is often measured in MIPS (Millions of Instructions Per Second) or FLOPS (Floating Point Operations Per Second), which tracks how many decimal calculations can be handled simultaneously.

• A computer performs operations at the level of microseconds (10^-^6), nanoseconds (10^-^9), and even picoseconds (10^-$^{12}$), making it indispensable for real-time applications such as satellite launching and stock market trading.

• The functions of the Central Processing Unit (CPU) are designed to minimize latency, ensuring that the execution time for binary logic gates is kept to an absolute minimum.

Additional Information

• Accuracy: This refers to the precision of the computer's results. If the input data is correct, the computer will produce 100% accurate results. Errors are usually caused by humans (incorrect algorithms or data), a phenomenon known as GIGO (Garbage In, Garbage Out).

• Versatility: A computer is a versatile machine capable of performing almost any task provided it can be reduced to a series of logical steps. It can be used for scientific research, graphic design, financial accounting, and entertainment without changing its hardware structure.

• Storage (Memory): Computers have a massive storage capacity. They use Primary Memory (RAM) for active tasks and Secondary Storage like Hard Disk Drives (HDD) or Solid State Drives (SSD) for permanent retention. Data is measured in Bytes, Kilobytes (KB), Megabytes (MB), Gigabytes (GB), and Terabytes (TB).

• Diligence: Unlike humans, computers do not suffer from tiredness, boredom, or lack of concentration. They can work 24/7 for days or months while maintaining the exact same speed and accuracy for every instruction.

• No I.Q.: A computer lacks an Intelligence Quotient; it cannot think or make decisions on its own. It relies entirely on the software and instructions provided by the user or programmer.

Important Points

• Evolution of Speed: In 1965, Gordon Moore predicted that the number of transistors on a microchip would double approximately every two years, a principle known as Moore's Law, which has driven the exponential growth in processing speed.

• Microprocessors: The transition from vacuum tubes to transistors and later to Integrated Circuits (ICs) significantly enhanced the speed and reduced the size of computers. Modern multi-core processors allow parallel processing, further boosting efficiency.

• Applications: The speed characteristic is critical in weather forecasting, where supercomputers analyze atmospheric data in real-time to predict cyclones or rainfall.

• Data Transfer Speed: Apart from processing speed, computers also feature high I/O (Input/Output) speed, often measured in bits per second (bps) or Megabits per second (Mbps), which is vital for internet connectivity and network communications.

**Q91. Answer: (d) 50%**

Shortcut Trick

Let CP = 100

=> MP = 100 + 136 = 236
=> Required SP = 118 (18% profit)
=> Discount = 236 − 118 = 118
=> Discount% = (118 ÷ 236) × 100 = 50%
Therefore Answer = 50%
Alternate Method
Given:
Marked price = 136% above CP
Required profit = 18%
Concept Used:
SP = CP × (1 + Profit%)
Discount% = [(MP − SP) ÷ MP] × 100
Calculation:
=> Let CP = 100
=> MP = 100 + 136 = 236
=> SP = 100 + 18 = 118
=> Discount = MP − SP = 236 − 118 = 118
=> Discount% = (118 ÷ 236) × 100
=> = 50%
Therefore Required discount = 50%
Additional Information
Markup: MP = CP + Markup%
Profit: SP = CP × (1 + Profit%)
Discount: Discount% = (Discount ÷ MP) × 100
Shortcut Tip: Always assume CP = 100 for percentage problems

**Q92. Answer: (b) 72**

Shortcut Trick
Take average around 72:
=> (72, 68, 74, 70, 76)
=> Deviations = 0, −4, +2, −2, +4 → sum = 0
=> Average = 72
Therefore Answer = 72
Alternate Method
Given:
Marks = 72, 68, 74, 70, 76
Concept Used:
Average = Total sum ÷ Number of observations
Calculation:
=> Total = 72 + 68 + 74 + 70 + 76
=> = 360
=> Number of subjects = 5
=> Average = 360 ÷ 5 = 72
Therefore Average marks = 72
Additional Information
Average Formula: Average = Sum ÷ Count
Assumed Mean: Take a central value to simplify calculations
Shortcut: If deviations cancel out, assumed mean is the average
Tip: Use grouping around a central number for speed

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**Q93. Answer: (a) National Book Awards**

The correct answer is National Book Awards.

Key Points

• Rabih Alameddine and Omar El Akkad won top honors at the 2025 National Book Awards. Alameddine won the Fiction award for The True True Story of Raja the Gullible (and His Mother), while El Akkad took the Nonfiction prize for One Day, Everyone Will Have Always Been Against This, highlighting their success in one of the US's most prestigious literary events.

• In 2025, the prize gained international spotlight with the appointment of the acclaimed Egyptian-Canadian author Omar El Akkad as the Chair of the Judging Panel. This appointment is considered a top honor in the literary community, recognizing his significant contributions to contemporary fiction.

• Authors like Rabih Alameddine, a Lebanese-American novelist and painter, are often recognized in such global literary forums for their work that bridges cultural divides, particularly in the context of displacement and identity.

• Established in 1950, these are a set of annual U.S. literary awards.

• The awards are overseen by the National Book Foundation and include categories such as Fiction, Non-fiction, Poetry, Translated Literature, and Young People's Literature.

• The goal is to celebrate the best "American" literature and expand its audience.

Additional Information

• Commonwealth Writers' Prize

• The prize is administered by the Commonwealth Foundation and is unique because it is the only award that accepts entries in multiple languages (such as Bengali, Chinese, French, Greek, Malay, Portuguese, Samoan, Swahili, Tamil, and Turkish) provided they are translated into English.

• The competition is divided into five regions: Africa, Asia, Canada and Europe, Caribbean, and the Pacific.

• Pulitzer Prize:

• Established in 1917 by provisions in the will of Joseph Pulitzer, it is administered by Columbia University in New York City.

• It honors excellence in journalism, literature, and musical composition within the United States.

• Winners receive a certificate and a $15,000 cash award, while the winner in the Public Service category of journalism is awarded a gold medal.

• Booker Prize:

• Launched in 1969, it is a leading literary award in the English-speaking world, conferred annually for the best novel written in English and published in the UK or Ireland.

• The winner receives £50,000, and being shortlisted alone brings significant international recognition and a "Booker boost" in sales.

• Notable past winners include Salman Rushdie, Margaret Atwood, and Arundhati Roy.

Important Points

• Omar El Akkad's Significance: He is the author of the critically acclaimed novel "American War" (2017) and "What Strange Paradise" (2021), the latter of which won the Giller Prize. His leadership as the 2025 Chair for the Commonwealth prize signifies a focus on global migration and human rights themes.

• Rabih Alameddine's Profile: Known for "The Angel of History" and "The Wrong End of the Telescope" (which won the PEN/Faulkner Award for Fiction in 2022). His inclusion in top literary honors reflects the industry's shift toward diverse, international narratives.

• Prize Values: The Commonwealth Short Story Prize offers £5,000 to the overall winner and £2,500 to each of the five regional winners. It serves as a vital career-starter for writers in countries with little indigenous publishing industry.

**Q94. Answer: (d) Either House of the Parliament**

The correct answer is Either House of the Parliament.

Key Points

• The procedure for the impeachment of the President of India is a quasi-judicial procedure explicitly mentioned in Article 61 of the Constitution of India.

• The charge for the impeachment of the President can be preferred by either House of the Parliament, which means it can originate in either the Lok Sabha or the Rajya Sabha.

• To initiate the process, the charges must be signed by at least one-fourth (1/4th) of the total membership of the House that framed the charges.

• A 14 days prior notice in writing must be given to the President before the resolution is moved in the House.

• The resolution to impeach the President must be passed by a majority of not less than two-thirds (2/3rd) of the total membership of the House in which it was introduced.

Additional Information

• Grounds for Impeachment:

• The only ground for the impeachment of the President mentioned in the Constitution is the "Violation of the Constitution". However, the term "Violation of the Constitution" is not defined in the Constitution of India.

• Investigation by the Second House:

• After the resolution is passed by the originating House, it is sent to the other House, which investigates the charges or causes the charges to be investigated.

• During this investigation, the President has the right to appear and to be represented to defend themselves.

• If the second House also sustains the charge and passes the impeachment resolution with a majority of not less than two-thirds (2/3rd) of the total membership, the President stands removed from office from the date on which the resolution is so passed.

• Participation in Impeachment:

• The nominated members of either House of Parliament can participate in the impeachment of the President, even though they do not participate in the election of the President.

• The elected members of the Legislative Assemblies of States and the Union Territories of Delhi and Puducherry do not participate in the impeachment process, even though they participate in the Presidential election.

• Historical Context:

• To date, no President of India has ever been impeached.

• The President serves a term of five years from the date of entering office, as per Article 56, but can be removed earlier through this process.

Important Points

• Article 56(1)(b): States that the President may, for violation of the Constitution, be removed from office by impeachment in the manner provided in Article 61.

• Vacancy in Office: If the office of the President falls vacant due to impeachment, resignation, or death, an election to fill the vacancy must be held within six months.

• Executive Powers: While the impeachment is a legislative check, the President remains the nominal head and the Supreme Commander of the Defence Forces of India until the resolution is successfully passed.

**Q95. Answer: (d) Two**

Given number: 7814329

Logic: Arrange all digits in ascending order and compare positions with the original number.

Original digits: 7 8 1 4 3 2 9

Ascending order: 1 2 3 4 7 8 9

| Position | Original Digit | Sorted Digit | Same? |
|---|---|---|---|
| 1 | 7 | 1 | No |
| 2 | 8 | 2 | No |
| 3 | 1 | 3 | No |
| 4 | 4 | 4 | Yes |
| 5 | 3 | 7 | No |
| 6 | 2 | 8 | No |
| 7 | 9 | 9 | Yes |

Now, digits whose positions remain unchanged are: 4 (position 4) and 9 (position 7)

Total = 2 digits

Hence, the correct answer is Option 4.

**Q96. Answer: (a) Close the current window or application**

The correct answer is Close the current window or application.

Key Points

• The primary function of the ALT + F4 keyboard shortcut in the Windows Operating System is to immediately close the active window or the application that is currently in focus. If the application has unsaved changes, it typically triggers a dialog box asking the user to save their work. Hence, the statement "Close the current window or application" is correct.

• When this shortcut is used while the Desktop is in focus (meaning no specific application window is active), it opens the Windows Shut Down dialog. This feature allows users to quickly Shut Down, Restart, Sleep, or Sign Out of the system without using the Start Menu.

• The ALT + F4 command sends a specific signal known as WM_CLOSE to the software. This is a "polite" way to close a program, as it allows the application to perform cleanup tasks or prompt for file saving, unlike the "End Task" function in Task Manager which terminates the process abruptly.

• The purpose of Switching tabs is generally handled by the Ctrl + Tab or Ctrl + Shift + Tab shortcut in most web browsers and editors. Hence, this statement is incorrect.

• The Delete selected text function is performed by the Delete key or the Backspace key on a standard keyboard. Hence, this statement is incorrect.

• The Open the Find dialog purpose is served by the Ctrl + F shortcut in almost all Windows applications, including browsers, Word processors, and PDF readers. Hence, this statement is incorrect.

Additional Information

• Historical Context: The ALT + F4 shortcut was standardized as part of the Common User Access (CUA) guidelines developed by IBM in the late 1980s. These guidelines were adopted by Microsoft to create a consistent user experience across different software programs.

• Comparison with Ctrl + F4: While ALT + F4 closes the entire application, the Ctrl + F4 shortcut is used to close only the active document or tab within an application that supports multiple child windows (like Microsoft Excel workbooks or older versions of web browsers).

• Operating System Compatibility: While primarily associated with Windows 10, Windows 11, and older versions like Windows 7, similar functionality exists in other OS environments, such as Command + W or Command + Q in Apple's macOS.

• Accessibility and Efficiency: Keyboard shortcuts are essential for Productivity as they reduce reliance on the computer mouse. They are also crucial for Accessibility, helping users with motor impairments who may find it difficult to click small GUI buttons like the "X" in the top-right corner.

Important Points

• Emergency Close: If an application is not responding or frozen, ALT + F4 might not work. In such cases, users must utilize Ctrl + Shift + Esc to open the Task Manager and manually End Task for that specific application process.

• Gaming Context: In the gaming community, "Alt+F4" is often used as a prank or a meme, where players trick others into pressing it to quit the game unexpectedly, often resulting in a "rage quit" scenario.

• Browser Specifics: In modern browsers like Google Chrome, Mozilla Firefox, and Microsoft Edge, ALT + F4 will close every open tab and the entire browser window at once, whereas Ctrl + W closes only the individual tab.

• Laptop Keyboards: On many modern laptops (like HP, Dell, or Lenovo), the Function (Fn) key must be held down to use the F4 key's secondary function. Therefore, the actual combination might be Fn + Alt + F4 depending on the hardware configuration.

**Q97. Answer: (b) 123750**

Shortcut Trick

Use identity: $a + b + c = 0 \Rightarrow a^3 + b^3 + c^3 = 3abc$

$\Rightarrow 55 - 30 - 25 = 0$

$\Rightarrow$ So sum $= 3 \times 55 \times (-30) \times (-25)$

$\Rightarrow = 3 \times 55 \times 750 = 123750$

Therefore Answer = 123750

Alternate Method

Given:

Numbers = 55, −30, −25

Concept Used:

$a^3 + b^3 + c^3 - 3abc = (a + b + c)(a^2 + b^2 + c^2 - ab - bc - ca)$

Calculation:

$\Rightarrow a + b + c = 55 - 30 - 25 = 0$

$\Rightarrow$ So, $a^3 + b^3 + c^3 = 3abc$

$\Rightarrow = 3 \times 55 \times (-30) \times (-25)$

$\Rightarrow = 3 \times 55 \times 750$

$\Rightarrow = 123750$

Therefore Sum of cubes = 123750

Additional Information

Special Identity: If $a + b + c = 0 \Rightarrow a^3 + b^3 + c^3 = 3abc$

General Identity: $a^3 + b^3 + c^3 - 3abc = (a + b + c)(...)$

Shortcut Tip: Always check if sum is zero before expanding cubes

Sign Rule: Negative × Negative = Positive

**Q98. Answer: (d) Glycosuria**

The correct answer is Glycosuria.

Key Points

• Glycosuria is a medical condition characterized by the excretion of glucose in the urine. Under normal physiological conditions, the kidneys filter glucose through the glomerulus and then reabsorb nearly 100% of it back into the bloodstream.

• The reabsorption process primarily takes place in the Proximal Convoluted Tubule (PCT) of the nephron. This is facilitated by specialized transport proteins known as Sodium-Glucose Co-transporters (SGLT1 and SGLT2). Hence, the definition matches the condition described in the question.

• There is a limit to how much glucose the kidneys can reabsorb, known as the Renal Threshold. For most healthy adults, this threshold is approximately 160 to 180 mg/dL of blood glucose.

• When blood sugar levels exceed this threshold, the SGLT transporters become saturated (reach their maximum capacity), and the excess glucose is spilled into the urine.

• The most common cause of Glycosuria is Diabetes Mellitus (Type 1 or Type 2), where high levels of blood glucose result in significant sugar loss through the urinary system.

Additional Information

• Ascites: This refers to the abnormal buildup of fluid in the peritoneal cavity (abdomen). It is frequently caused by Liver Cirrhosis, portal hypertension, or heart failure. It is not related to the excretion of glucose.

• Lupus Nephritis: This is an autoimmune disease that occurs as a complication of Systemic Lupus Erythematosus (SLE). In this condition, the body's immune system attacks the kidneys, specifically the glomeruli, leading to proteinuria (protein in urine) or hematuria (blood in urine), but not specifically primary glycosuria.

• Cystinosis: This is a rare lysosomal storage disorder caused by genetic mutations. It leads to the accumulation of cystine crystals in various organs, especially the kidneys. This can lead to Fanconi Syndrome, where the kidneys fail to reabsorb various substances like glucose, amino acids, and electrolytes.

• Renal Glycosuria: Unlike diabetic glycosuria, Renal Glycosuria is a rare condition where glucose is excreted in the urine despite normal blood sugar levels. This happens due to a specific functional defect in the renal tubules.

Important Points

• Diagnosis: Glycosuria is usually detected during a Urinalysis using a dipstick test. The presence of sugar is indicated by a color change on the chemically treated strip.

• Symptoms: While Glycosuria itself might be asymptomatic, the underlying Diabetes Mellitus often causes Polyuria (excessive urination), Polydipsia (excessive thirst), and Polyphagia (excessive hunger).

• Gestational Glycosuria: It is common for pregnant women to exhibit Glycosuria because the Glomerular Filtration Rate (GFR) increases during pregnancy, and the Renal Threshold for glucose may naturally decrease.

• Historical Context: The term comes from the Greek words "glykys" (sweet) and "ouron" (urine). Ancient physicians used to diagnose the "honey-sweet" urine of diabetics by observing if ants were attracted to it.

**Q99. Answer: (b) FIQ 33**

The logic followed here is:

So, 'FIQ 33' will replace the question mark in the given series.

Hence, the correct answer is "Option 2".

**Q100. Answer: (c) (28, 224, 4)**

The logic followed here is:

Logic: Middle term = (1st number × 3rd number × 2)

(34, 1088, 16)

=> 34 × 16 × 2 = 1088

(21, 420, 10)

=> 21 ×10 × 2 = 420

Now, checking options:

Option 1) (23, 513, 11)

=> 23 × 11 × 2 = 506 (false)

Option 2) (4, 79, 9)

=> 4 × 9 × 2 = 72 (false)

Option 3) (28, 224, 4)

=> 28 × 4 × 2 = 224 (true)

Option 4) (8, 279, 17)

=> 8 × 17 × 2 = 272 (false)

Hence, the correct answer is Option 3.

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