RRB NTPC (UG) CBT-I Official Paper (Held On: 11 Aug, 2025 Shift 2) (Previous Year Paper)

RRB Group D • 2025 • 100 questions • 90 minutes • Answer key and solutions

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GENERAL AWARENESS

Q1. Who addressed the opening session of the 24th edition of the World Sustainable Development Summit in New Delhi in March 2025?

(a) Pralhad Joshi
(b) Bhupender Yadav
(c) Piyush Goyal
(d) Amit Shah

Q2. Which of the following rivers is a peninsular river and flows eastward?

(a) Sabarmati
(b) Narmada
(c) Tapti
(d) Mahanadi

Q3. Which of the following US biotech companies opened a $200 million tech and innovation hub in 2025?

(a) Genentech
(b) Biogen
(c) Novavax
(d) Amgen

Q4. Which of the following conducted India’s inaugural Agentic AI Hackathon in 2025?

(a) AI Nexus Foundation
(b) Techvantage.ai
(c) DigitalNext AI
(d) Bharat Innovation Lab

Q5. Which sector was given top priority under the Second Five-Year Plan of India (1956-61)?

(a) Education and health
(b) Agriculture
(c) Small-scale industries
(d) Heavy and basic industries

Q6. Who among the following was the renowned poet-saint of the Bhakti movement known for composing dohas (couplets)?

(a) Bhasa
(b) Kabir
(c) Kalidasa
(d) Bharavi

Q7. In March 2025, the Lok Sabha passed the Bills of Lading Bill, modernising how many years of old colonial shipping law?

(a) 169 years
(b) 175 years
(c) 150 years
(d) 120 years

Q8. Which of the following is an example of a longitudinal wave?

(a) Water wave on surface
(b) Light wave in vacuum
(c) Sound wave in air
(d) Radio wave during transmission

Q9. Who has written the book 'Parliament: Powers, Functions & Privileges; A Comparative Constitutional Perspective', launched by the former Vice-President Jagdeep Dhankhar in January 2025?

(a) MJ Akbar
(b) Dr. Rajen Saikia
(c) Dr. KS Chauhan
(d) K Natwar Singh

Q10. Which method used in metallurgy specifically describes the formation of metal oxides by heating carbonate ores?

(a) Calcification
(b) Chlorination
(c) Calcination
(d) Carbonation

Q11. Which exercise did INS Shivalik complete just before joining RIMPAC in June 2024?

(a) AUSINDEX
(b) INDRA
(c) JIMEX
(d) SLINEX

Q12. The location of cement plants is mainly governed by the availability of:

(a) bauxite
(b) cotton
(c) iron ore
(d) limestone

Q13. Which Indian Prime Minister is closely associated with initiating the 1991 LPG reforms?

(a) Rajiv Gandhi
(b) Indira Gandhi
(c) Atal Bihari Vajpayee
(d) PV Narasimha Rao

Q14. A computer system mainly includes which three components?

(a) CPU, Scanner, Air Conditioner
(b) Monitor, USB, Light
(c) Mouse, CPU, Mobile
(d) Input, Processing, Output

Q15. What type of rainfall occurs when air is forced to rise over a mountain barrier?

(a) Cyclonic rainfall
(b) Orographic rainfall
(c) Convectional rainfall
(d) Frontal rainfall

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Q16. Which of the following devices is primarily used to convert digital signals into sound for audio output?

(a) Printer
(b) Speaker
(c) Microphone
(d) Monitor

Q17. Which country served as the host for the 2025 Asian Winter Games?

(a) Kazakhstan
(b) China
(c) Japan
(d) South Korea

Q18. Who was appointed as the Chairperson of the 23rd Law Commission of India in April 2025?

(a) Justice (Retd.) Ranjan Gogoi
(b) Justice (Retd.) AK Sikri
(c) Justice (Retd.) Dinesh Maheshwari
(d) Justice (Retd.) Kurian Joseph

Q19. Which of the following is NOT a principle of Jainism?

(a) The whole world, including stone and water, has life.
(b) Rejection of the doctrine of Karma
(c) Practice of non-injury to living beings
(d) Monastic life is the only way to salvation.

Q20. Which island nation lies to the south of the Lakshadweep Islands?

(a) Maldives
(b) Andaman Islands
(c) Sri Lanka
(d) Mauritius

Q21. Puja Tomar, the first Indian woman to achieve a victory in a UFC (Ultimate Fighting Championship) fight in 2024, participates in which sport?

(a) Wrestling
(b) Mixed Martial Arts
(c) Boxing
(d) Judo

Q22. Hema Malini, who was appointed Member of Committee on the Empowerment of Women in April 2025, represents which parliamentary constituency?

(a) Bareilly
(b) Agra
(c) Meerut
(d) Mathura

Q23. Which military operation was launched to integrate Hyderabad into India in 1948?

(a) Operation Shield
(b) Operation Peace
(c) Operation Polo
(d) Operation Lotus

Q24. Which of the following Articles of the Indian Constitution provides for the composition of Municipalities?

(a) Article 243S
(b) Article 243R
(c) Article 243X
(d) Article 243Q

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Q25. What makes basic rules in the Constitution effective?

(a) They are based on popular customs only.
(b) They are legally enforceable.
(c) They are a secret.
(d) They are not enforced.

Q26. Globalisation influenced consumer choices in India. Which trend reflects the impact of globalisation on Indian consumers?

(a) Decline in foreign goods
(b) Less brand diversity
(c) Monopolisation of FMCG
(d) Wider availability of international brands

Q27. In which of the following Indian cities was the Prarthana Samaj, which believed in the spiritual equality of all castes, founded in the 19th century?

(a) Bombay
(b) Kanpur
(c) Mysore
(d) Jodhpur

Q28. Which two chemists are credited with developing the law of mass action in 1864, which states that the concentration of the reactants determines how quickly a chemical change occurs?

(a) Fritz Haber and Carl Bosch
(b) Carl Wilhelm Scheele and Humphry Davy
(c) Cato M Guldberg and Peter Waage
(d) Georg Brandt and Torbern Bergman

Q29. On the occasion of Republic Day 2025, the president of India conferred how many Jeevan Raksha Padak Series of Awards-2024?

(a) 17
(b) 09
(c) 49
(d) 23

Q30. In May 2025, which Indian AI healthcare startup announced plans to go public within two years, aiming to expand its diagnostic tools for conditions like tuberculosis and stroke?

(a) HealthifyMe
(b) Niramai
(c) 1mg
(d) Qure.ai

Q31. Which of the following Amendments clarified that the President must act in accordance with the advice of the Council of Ministers?

(a) 44th Amendment
(b) 42nd Amendment
(c) 24th Amendment
(d) 74th Amendment

Q32. What was the Congress leaders' approach to achieving limited self-government in the early years?

(a) Peaceful petitions
(b) Violent protests
(c) Foreign intervention
(d) Revolutionary wars

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Q33. Which of the following states recorded the second-highest population density in 2011 as per the Census of India?

(a) Madhya Pradesh
(b) Maharashtra
(c) Uttar Pradesh
(d) West Bengal

Q34. Which of the following options best describes the purpose of the Red Data Book?

(a) A list of protected forest areas
(b) A compilation of forest conservation laws
(c) A record of endangered plant and animal species
(d) A collection of tree species

Q35. How are the one-third reserved seats for women distributed across different categories in local bodies?

(a) Only one-third of the general (unreserved) seats are reserved for women, excluding reserved-category seats.
(b) One-third of all seats, including those reserved for SC/ST/OBC categories, are reserved for women, allowing a seat to be reserved simultaneously for a woman and for an SC/ST/OBC candidate.
(c) One-third reservation applies only to leadership positions such as Sarpanch or Chairperson.
(d) One-third reservation applies only to rural Panchayats and not to urban municipal bodies.

Q36. Which of the following countries launched Operation Brahma for the earthquake in Myanmar?

(a) Bhutan
(b) Thailand
(c) India
(d) Cambodia

Q37. According to the Citizenship Act, how many years must a person ordinarily reside in India to apply for citizenship by naturalisation under general conditions?

(a) 5 years
(b) 7 years
(c) 12 years
(d) 10 years

Q38. The BIMSTEC Youth Summit 2025 was held in which city?

(a) Gandhinagar
(b) Mumbai
(c) New Delhi
(d) Bengaluru

Q39. Agricultural credit has grown significantly since liberalisation, though distribution remains uneven. Which institution is the apex body for rural credit in India?

(a) RBI
(b) SIDBI
(c) NABARD
(d) FCI

Q40. The Shaka dynasty in India was founded by _____.

(a) Maues (Moga)
(b) Nahapana
(c) Rudradaman I
(d) Menander I

MATHEMATICS

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Q41. The value of $2^2+\sqrt{(8^2)}-2\sqrt{4}-11$ is

(a) 5
(b) -7
(c) 2
(d) -3

Q42. The product of two consecutive positive natural numbers is 272. The greater of the two numbers is:

(a) 36
(b) 9
(c) 17
(d) 28

Q43. Find the value of $[290 \div \{27 + 5 \times (2 - 7)\}]$.

(a) 145
(b) 141
(c) 140
(d) 150

Q44. What smallest number should be added to 81661 so that the sum is completely divisible by 73?

(a) 25
(b) 24
(c) 26
(d) 30

Q45. ABCD is a trapezium in which BC || AD and AC = CD. If angle ABC = 113° and angle BAC = 26°, then what is the measure of angle ACD (in degree)?

(a) 168°
(b) 165°
(c) 98°
(d) 166°

Q46. A store sells a printer priced at Rs. 32,000, offering a trade discount of 9%. What is the discount amount?

(a) Rs. 2,780
(b) Rs. 2,880
(c) Rs. 2,740
(d) Rs. 2,840

Q47. Pipe A can fill a tank in 14 hours, pipe B can fill the same tank in 24 hours and pipe C can fill the same tank in 17 hours. The time taken by them to fill the same tank if they operate together is:

(a) 5401/491 hours
(b) 11401/491 hours
(c) 10401/491 hours
(d) 2401/491 hours

Q48. I bought two frocks for Rs. 1,200. I sold the first one at a loss of 10% and the second at a gain of 15%. If, on the whole I made neither a loss nor a gain, find the cost price (in Rs.) of the first frock.

(a) 740
(b) 744
(c) 704
(d) 720

Q49. Train A leaves station M at 8:05 a.m. and reaches station N at 3:05 p.m. on the same day. Train B leaves station N at 10:05 a.m. and reaches station M at 3:05 p.m. on the same day. Find the time when Trains A and B meet.

(a) 12:10 p.m.
(b) 12:30 p.m.

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(c) 12:00 p.m.
(d) 11:50 a.m.

Q50. Find the surface area of a cuboid with length 8 cm, breadth 5 cm and height 3 cm.
(a) 140 cm^2
(b) 94 cm2
(c) 158 cm2
(d) 126 cm2

Q51. Priya can do a certain piece of work in 22 days. Priya and Varsha can together do the same work in 11 days, and Priya, Varsha and Nisha can do the same work together in 8 days. In how many days can Priya and Nisha do the same work?
(a) 94/9
(b) 95/8
(c) 78/7
(d) 88/7

Q52. Find the value of x satisfying: $5(5x^2 - 7) - 5(5x^2 + 2x - 4) = 15$
(a) 2
(b) -1
(c) -3
(d) 0

Q53. What sum of money (in Rs.) will amount to Rs. 2,280 at 4% per annum simple interest in 5 years?
(a) Rs. 11,400
(b) Rs. 1,900
(c) Rs. 1,850
(d) Rs. 1,950

Q54. Which of the following numbers divide 726179?
(a) 29
(b) 28
(c) 23
(d) 20

Q55. If the third proportional of 54 and 18 is x, then what is the value of x?
(a) 5
(b) 6
(c) 9
(d) 3

Q56. The average weight of Vipul, Mohan, and Mohammad is 46 kg. If the average weight of Vipul and Mohan is 36 kg and that of Mohan and Mohammad is 43 kg, then the weight of Mohan (in kg) is:
(a) 30
(b) 20
(c) 35
(d) 40

Q57. The population of a district is 364000, out of which 178000 are males. 63% of the population is literate. If 63% males are literate, then what percentage of females are literate?
(a) 66%
(b) 62%
(c) 63%
(d) 65%

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Q58. A man driving a car at a speed of 75 km/hr crosses a bridge in 1.4 minutes. Find the length of the bridge.

(a) 1.02 km
(b) 1.75 km
(c) 1.18 km
(d) 1.01 km

Q59. If 2 times a mother's present age is 27 years more than 9 times her daughter's present age, and 6 times the daughter's present age is 9 years less than the mother's present age, then what is the difference (in years) between the ages of the mother and the daughter?

(a) 21
(b) 29
(c) 24
(d) 23

Q60. Find the simple interest (in Rs.) on Rs. 4,000 at 6.75% per annum rate of interest deposited on 23 February 2024 and withdrawn on 24 April 2024.

(a) Rs. 43
(b) Rs. 44
(c) Rs. 45
(d) Rs. 46

Q61. A jacket is marked at Rs. 8,000. The shopkeeper offers a 30% discount on the marked price. After the discount, a 12% sales tax is added on the discounted price. What is the final price of the jacket?

(a) Rs. 6,440
(b) Rs. 7,248
(c) Rs. 6,240
(d) Rs. 6,272

Q62. Find the value of $(\sin A-2\sin^3 A)/(2\cos^3 A-\cos A)+\sqrt{(\operatorname{cosec}^2 A-1)}$

(a) sec A cosec A
(b) $\operatorname{cosec}^2 A$
(c) $\sec^2 A$
(d) sec A

Q63. The perimeter of a square is 248 m. Its area (in m^2) is:

(a) 3848
(b) 3816
(c) 3840
(d) 3844

Q64. Manoj, Swati and Rahul invested Rs. 1,020, Rs. 1,440 and Rs. 1,230, respectively to start a business. If the profit at the end of the year is Rs. 1,260, what is Rahul's share of the profit?

(a) Rs. 420
(b) Rs. 423
(c) Rs. 421
(d) Rs. 422

Q65. The average weight (in kg) of a family of five members whose weights are 40 kg, 49 kg, 56 kg, 73 kg and 39 kg is:

(a) 51.4
(b) 53.4
(c) 52.4
(d) 50.4

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Q66. A number when increased by 100% gives 2700. The number is:

(a) 1350
(b) 2700
(c) 4050
(d) 675

Q67. The selling price of 50 books is equal to the cost price of 5 books. Find the loss or gain percentage.

(a) 90% loss
(b) 90% gain
(c) 100/45% loss
(d) 100/45% gain

Q68. Which of the following numbers divides 159916901?

(a) 25
(b) 19
(c) 28
(d) 18

Q69. M and N start a business. M invests Rs. 70,000 more than N for 3 months and N invests for 5 months. M's share is Rs. 288 more than that of N, out of a total profit of Rs. 4,896. Find the capital contributed by M.

(a) Rs. 1,50,000
(b) Rs. 1,40,000
(c) Rs. 1,80,000
(d) Rs. 1,60,000

Q70. The LCM of $3^3 \times 8^2 \times 14$, $3^2 \times 14^2 \times 19$ and $8^3 \times 14^2 \times 19^2$is:

(a) $3^3 \times 8^2 \times 14^2 \times 19$
(b) $3^2 \times 82 \times 142 \times 19^3$
(c) $3^2 \times 8^3 \times 14 \times 19^2$
(d) $33 \times 8^3 \times 142 \times 19^2$

GENERAL INTELLIGENCE AND REASONING

Q71. 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) UQ-VR
(b) QM-RO
(c) SO-TQ
(d) WS-XU

Q72. 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 marks are tattoo.

No tattoo is a painting.

Conclusions:

(I): Some marks are painting.

(II): Some tattoo are mark.

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

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(d) Only conclusion (II) follows.

Q73. In a certain code language, 'DRUM' is coded as '2194' and 'CURD' is coded as '4592'. What is the code for 'C' in the given code language?

(a) 2
(b) 5
(c) 9
(d) 4

Q74. What should come in place of the question mark (?) in the given series?

316 288 262 238 216 ?

(a) 185
(b) 205
(c) 196
(d) 172

Q75. In a row of people all facing north, Mukul is 5th from the right end. Alok is 10th from the right end. Alok is exactly between Mukul and Rohan. If Rohan is 6th from the left end of the line, how many people are there in the row?

(a) 20
(b) 23
(c) 26
(d) 24

Q76. What should come in place of the question mark (?) in the given series?

7 10 16 28 52 ?

(a) 99
(b) 104
(c) 100
(d) 102

Q77. In a certain code language, 'TALK' is coded as '5327' and 'LINE' is coded as '6143'. What is the code for 'L' in the given code language?

(a) 2
(b) 6
(c) 4
(d) 3

Q78. If 'P' stands for '×', 'Q' stands for '÷', 'R' stands for '−' and 'S' stands for '+', then what will come in place of the question mark (?) in the following equation?

(63 P 2) R (24 P 3) S (98 Q 2) R (48 Q 3) R 3 = ?

(a) 98
(b) 84
(c) 122
(d) 104

Q79. In the following triads, each group of letters is related to the subsequent one following a certain logic. Select from the given options, the one which follows the same logic.

SAIN - ANIS - NIAS

COIN - ONIC - NIOC

(a) YOUR - YUOR - RUOY
(b) MACE - AMCE - EACM
(c) MILE - IELM - ELIM
(d) FEAT - EFAT - TEAF

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Q80. Refer to the following number, symbol series and answer the question. Counting to be done from left to right only.

(Left) 9 8 6 1 & & 2 ^ ^ $ $ > 5 ^ 6 ^ 4 & # 6 @ (Right)

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

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

Q81. If 1 is added to each odd digit and 4 is subtracted from each even digit in the number 6854376, which of the following digits will be third from the right?

(a) 6
(b) 4
(c) 0
(d) 8

Q82. B starts from Point A and drives 16 km towards the south. He then takes a right turn and drives 12 km, then turns right and drives 19 km. He then takes a right turn and drives 21 km. He takes a final right turn, drives 3 km and stops at Point P. How far (shortest distance) and in which direction should he drive in order to reach Point A again? (All turns are 90-degree turns only unless specified.)

(a) 4 km to the north
(b) 7 km to the east
(c) 9 km to the west
(d) 5 km to the west

Q83. BSWK is related to GXTH in a certain way based on the English alphabetical order. In the same way, LCQE is related to QHNB. To which of the given options is VMKY related, following the same logic?

(a) AQIW
(b) BSGV
(c) ARHV
(d) ZRFU

Q84. In a row of 49 students facing north, Amir is 22nd from the right end. If Tarun is 23rd to the left of Amir, what is Tarun's position from the left end of the line?

(a) 3^(rd)
(b) 5^(th)
(c) 4^(th)
(d) 6^(th)

Q85. 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 conclusion(s) logically follow(s) from the statements.

Statements:

All sharks are salmons.

Some salmons are tunas.

Conclusions:

I. Some sharks are tunas.

II. No tunas are sharks.

(a) Either conclusion (I) or (II) follows.
(b) Both conclusions (I) and (II) follow
(c) Only conclusion (II) follows.
(d) Only conclusion (I) follows.

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Q86. Seven boxes A, B, C, D, E, F and G are kept one over the other but not necessarily in the same order. Only B is kept above C. Only two boxes are kept between C and A. Only E is kept below F. G is not kept immediately above A. How many boxes are kept below A?

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

Q87. If + means 'subtraction', − means 'division', ÷ means 'multiplication', × means 'addition', then what will come in place of the question mark (?) in the following equation?

49 − 1 × 480 + 40 ÷ 6 = ?

(a) 291
(b) 289
(c) 292
(d) 290

Q88. 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' and

'A * B' means 'A is the father of B'.

How is W related to R if W = A $ C @ D * R?

(a) Mother's mother
(b) Mother's sister
(c) Sister
(d) Mother

Q89. Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete?

FIB27 GJC38 HKD49 ILE60 ?

(a) JMF71
(b) JME70
(c) JME71
(d) JMF70

Q90. Seven people, I, J, K, L, M, N and O, are sitting in a row, facing north. No one sits to the right of K. Only three people sit between K and J. Only two people sit between J and I. L sits third to the left of O. M sits to the immediate right of O. How many people sit between N and I?

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

Q91. What should come in place of the question mark (?) in the given series based on the English alphabetical order?

WXA UWB SVC QUD OTE ?

(a) MRF
(b) LRF
(c) MSF
(d) MRE

Q92. Sukesh starts from Point Y and drives 25 km towards south. He then takes a left turn, drives 7 km. He then turns right and drives 5 km. He takes a final right turn, drives 7 km and stops at Point Z. How far (shortest distance) and towards which direction should he drive in order to reach Point Y again? (All turns are 90° turns only unless specified.)

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(a) 30 km towards north
(b) 7 km towards west
(c) 14 km towards south
(d) 25 km towards east

Q93. ORJN is related to ILDH in a certain way based on the English alphabetical order. In the same way, MPHL is related to GJBF. To which of the given options is TWOS related, following the same logic?
(a) QNMI
(b) QNIM
(c) NQMI
(d) NQIM

Q94. A, B, C, D, E, F and G are sitting around a circular table facing the centre. B sits second to the right of A. G sits second to the right of B. C is the immediate neighbour of E and G. D sits second to the right of E. How many people sit between F and E when counted from the left of E?
(a) Five
(b) Three
(c) Four
(d) Two

Q95. If 1 is added to each even digit of the number 85624179, find the sum of the digits that are repeated more than once in the new number thus formed.
(a) 12
(b) 16
(c) 14
(d) 21

Q96. What should come in place of the question mark (?) in the given series?
981 982 986 995 1011 ?
(a) 1026
(b) 1036
(c) 1021
(d) 1031

Q97. This question is based on the five, three-digit numbers given below.
(Left) 716 893 279 546 182 (Right)
(Example: 697 – First digit = 6, second digit = 9 and third digit = 7)
(NOTE: All operations to be done from left to right.)
If the given numbers are rearranged in descending order, what is the third digit of the fourth number from the left extreme end?
(a) 4
(b) 9
(c) 6
(d) 7

Q98. 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 pair.)
(a) KO-ON
(b) CG-FG
(c) AE-DE
(d) SW-VW

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Q99. In the following number-pairs, the second number is obtained by applying certain mathematical operation(s) to the first number. Select the number-pair in which the numbers are related in the same way as are the numbers of the following pairs. (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 to/subtracting from/multiplying with 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

9, 108

16, 192

(a) 14, 154
(b) 6, 66
(c) 12, 162
(d) 11, 132

Q100. Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group?

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

(a) FMH
(b) KRM
(c) DKE
(d) HOJ

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (b) Bhupender Yadav

The Correct answer is Bhupender Yadav.

Key Points

• Bhupender Yadav is the Union Minister of Environment, Forest and Climate Change in India.

• He has been actively involved in promoting sustainable development and addressing climate change concerns through various initiatives.

• As the head of the Ministry of Environment, Forest and Climate Change, he plays a key role in overseeing environmental policies, regulations, and international agreements related to sustainability.

• The World Sustainable Development Summit (WSDS), organized by The Energy and Resources Institute (TERI), is a global platform for discussing pressing issues like climate change, energy transition, and sustainable development.

• Addressing the summit aligns with his portfolio and showcases India's commitment to global environmental goals and sustainable practices.

• His participation in such a significant event emphasizes India's proactive role in tackling environmental challenges and contributing to global sustainability efforts.

Additional Information

• Pralhad Joshi

• Pralhad Joshi is the Union Minister of Parliamentary Affairs, Coal, and Mines.
• He oversees policies and regulations related to coal mining, mineral resources, and parliamentary proceedings.
• His portfolio does not directly align with addressing sustainable development or climate-related issues.
• Piyush Goyal
• Piyush Goyal is the Union Minister of Commerce and Industry, Consumer Affairs, Food & Public Distribution, and Textiles.
• He is responsible for enhancing India's trade and industry policies and ensuring a robust economic framework.
• While his work contributes to economic sustainability, he does not directly oversee environmental initiatives.
• Amit Shah
• Amit Shah is the Union Minister of Home Affairs.
• His role primarily focuses on internal security, law enforcement, and governance within the country.
• Sustainability and climate-related issues are not part of his portfolio.

Q2. Answer: (d) Mahanadi

The Correct answer is Mahanadi River.

Key Points

• Mahanadi River is one of the prominent peninsular rivers of India that flows eastward.
• It originates in the Dhamtari district of Chhattisgarh.
• The river flows through the states of Chhattisgarh and Odisha before emptying into the Bay of Bengal.
• The Mahanadi is the third largest river in peninsular India after the Godavari and Krishna rivers.
• It has several tributaries, including the Seonath, Hasdeo, Mand, and Ib rivers.
• One of its major features is the Hirakud Dam, which is the longest earthen dam in the world, located near Sambalpur in Odisha.
• The river is a key source of irrigation and supports agriculture in the regions it flows through.

Additional Information

• Sabarmati River
• The Sabarmati River flows through the Indian states of Rajasthan and Gujarat.
• It originates from the Aravalli hills in Rajasthan and flows into the Arabian Sea.
• The river is important for water supply and irrigation in Gujarat.
• Narmada River
• The Narmada River is one of the most important west-flowing rivers in India.
• It originates from Amarkantak in Madhya Pradesh and flows into the Arabian Sea.
• The river is known for its cultural significance and is often referred to as the "Life Line of Madhya Pradesh and Gujarat".
• Tapti River
• The Tapti River is another west-flowing river in India.
• It originates from the Satpura ranges in Madhya Pradesh and flows into the Arabian Sea.
• The Tapti River is known for flowing parallel to the Narmada River.

Q3. Answer: (d) Amgen

The Correct answer is Amgen.

Key Points

• Amgen is a leading US-based biotechnology company, headquartered in Thousand Oaks, California.
• In 2025, the company opened a $200 million tech and innovation hub, focusing on cutting-edge advancements in biotechnology and pharmaceutical research.
• The hub emphasizes the use of artificial intelligence and data analytics to enhance drug discovery and development processes.
• Amgen is renowned for its contributions to biomedicine, especially in the fields of oncology, cardiovascular diseases, and inflammation.
• The company aims to improve healthcare outcomes by leveraging innovative technologies and creating advanced solutions for patients worldwide.
• Amgen has been a pioneer in using biotechnology to produce therapeutic proteins and has developed numerous successful products like Repatha, Enbrel, and Neulasta.

Additional Information

• Genentech
• Genentech is also a leading biotechnology company based in the United States.
• It is headquartered in South San Francisco, California.

• Genentech focuses on cancer treatments and is a subsidiary of the Roche Group.
• Some of its significant contributions include Avastin and Herceptin, used to treat various types of cancer.
• Biogen
• Biogen is another prominent biotechnology company headquartered in Cambridge, Massachusetts.
• It specializes in neurological and neurodegenerative diseases like multiple sclerosis, Alzheimer's disease, and Parkinson's disease.
• Biogen is known for its drug Tecfidera, which is used to treat multiple sclerosis.
• Novavax
• Novavax is a biotechnology company based in Gaithersburg, Maryland.
• It specializes in the development of vaccines for infectious diseases.
• Novavax gained recognition for its COVID-19 vaccine during the global pandemic.
• Its products are based on recombinant nanoparticle technology to enhance immune responses.

Q4. Answer: (b) Techvantage.ai

The Correct answer is Techvantage.ai.

Key Points

• Techvantage.ai is a leading organization specializing in Artificial Intelligence (AI) and machine learning (ML) solutions.
• The company is known for conducting innovative events such as hackathons, workshops, and conferences to promote AI-driven solutions and encourage collaboration among industry experts and aspiring developers.
• The Agentic AI Hackathon conducted by Techvantage.ai in 2025 marked a significant milestone in India's journey towards advancing AI technology.
• This event focused on exploring the potential of agent-based AI systems which are designed to mimic human decision-making processes and autonomous functionalities.
• Participants from across India showcased their expertise, contributing innovative ideas and prototypes to solve real-world problems using agentic AI approaches.
• Techvantage.ai collaborates with leading academic institutions, industry partners, and government agencies to foster innovation and build a robust ecosystem for AI research and development.
• The hackathon served as a platform to identify promising talent and groundbreaking solutions for industry applications.

Additional Information

• AI Nexus Foundation
• AI Nexus Foundation is a global non-profit organization focusing on ethical AI research and development.
• It is dedicated to creating guidelines and promoting responsible AI practices globally.
• While the foundation has significant contributions to AI ethics, it was not the organizer of India's inaugural Agentic AI Hackathon.
• DigitalNext AI
• DigitalNext AI is a technology firm specializing in digital transformation and AI-powered business solutions.
• The firm focuses primarily on enterprise-level applications of AI and has conducted several workshops and events, but it was not the host of the 2025 Agentic AI Hackathon.
• Bharat Innovation Lab
• Bharat Innovation Lab is an Indian initiative aimed at fostering innovation and entrepreneurship.
• It focuses on supporting startups and innovative projects in fields such as healthcare, education, and agriculture technology.
• While it plays a key role in promoting innovation in India, it did not conduct the Agentic AI Hackathon in 2025.

Q5. Answer: (d) Heavy and basic industries

The Correct answer is Heavy and basic industries.

Key Points

• The Second Five-Year Plan (1956-61) of India, formulated under the guidance of P.C. Mahalanobis, emphasized rapid industrialization as the key to economic development.
• The main focus of the plan was on the development of heavy and basic industries, such as steel, machinery, and infrastructure, which were considered essential for laying the foundation of a modern industrial economy.
• This plan followed the Mahalanobis model, which prioritized the production of capital goods over consumer goods to enhance long-term growth.
• Key projects initiated during this period include the establishment of steel plants at Bhilai, Rourkela, and Durgapur, which were built with the assistance of the Soviet Union, Germany, and the UK, respectively.
• The plan also focused on strengthening the public sector and creating a self-reliant economy by reducing dependency on foreign

imports.

• The emphasis on heavy industries was aimed at creating employment opportunities, boosting the production of essential goods, and accelerating the pace of economic progress in the country.

• By prioritizing heavy and basic industries, the plan sought to achieve a balanced regional development and address issues of economic disparity in the country.

Additional Information

• Education and health

• Although education and health were recognized as important sectors, they were not the top priority under the Second Five-Year Plan.

• The focus on education and health gained prominence in later plans, especially under the Fourth and Fifth Five-Year Plans, to improve human capital and social development.

• Agriculture

• Agriculture was prioritized under the First Five-Year Plan (1951-56) due to the immediate need to address food shortages post-independence.

• However, during the Second Five-Year Plan, agriculture received secondary importance as the emphasis shifted toward industrialization.

• Small-scale industries

• While the Second Five-Year Plan did include provisions to promote small-scale industries, these were not the central focus.

• Small-scale industries were considered crucial for generating employment and supporting rural development, but the major investments were directed toward heavy and basic industries.

Q6. Answer: (b) Kabir

The Correct answer is Kabir.

Key Points

• Kabir was a prominent poet-saint of the Bhakti movement, known for his devotional and philosophical poetry.

• He composed dohas (couplets), which are short and meaningful verses that convey profound spiritual truths in a simple language.

• Kabir was born in the 15th century in Varanasi (modern-day Uttar Pradesh, India), though his exact birth year is uncertain.

• He strongly opposed the rigid practices of both Hinduism and Islam and emphasized a universal path to spirituality.

• Kabir's teachings revolved around the concepts of love, unity, equality, and devotion to the Supreme Being.

• His works are included in the Guru Granth Sahib, the holy scripture of Sikhism.

• Some of his famous dohas include teachings about self-realization, truth, and the futility of rituals.

• Kabir's philosophy is often seen as a blend of Hindu Bhakti and Sufi mysticism.

Additional Information

• Bhasa

• Bhasa was a classical Sanskrit dramatist and one of the earliest known Indian playwrights.

• He is believed to have lived before Kalidasa, possibly around the 3rd century CE.

• Some of his most famous works include Swapnavasavadatta and Uru-Bhanga.

• Bhasa's works are known for their simplicity and innovative themes.

• Kalidasa

• Kalidasa was a renowned classical Sanskrit poet and dramatist.

• He is often regarded as the Shakespeare of India.

• Some of his famous works include Abhijnana Shakuntalam, Meghaduta, and Raghuvamsa.

• Kalidasa's poetry and plays often revolve around themes of love and nature.

• Bharavi

• Bharavi was a 6th-century Sanskrit poet known for his epic poem Kiratarjuniya.

• The poem is based on an episode from the Mahabharata, where Arjuna meets Lord Shiva in the guise of a hunter.

• Bharavi's work is celebrated for its rich vocabulary and complex style.

Q7. Answer: (a) 169 years

The Correct answer is 169 years.

Key Points

• The Lok Sabha passed the Bills of Lading Bill in March 2025 to modernize colonial-era shipping laws.

• This Bill updates laws that have been in existence for 169 years, dating back to the mid-19th century.

• The Bills of Lading is a significant document in the shipping industry, acting as proof of shipment and ownership of goods.
• The modernization reflects India's effort to align its maritime laws with international shipping standards.
• The Bill aims to enhance the efficiency, transparency, and legal clarity in the shipping and maritime domain.
• This reform is expected to boost India's maritime sector and promote ease of doing business.

Colonial shipping laws were outdated and did not meet the requirements of modern trade practices, necessitating this change.

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• -
• -
• Additional Information
• 175 years
• This option is incorrect because the colonial shipping laws being modernized date back to 1856, making the duration 169 years as of 2025.
• 150 years
• This option underestimates the actual age of the colonial shipping laws, which are older than 150 years.
• 120 years
• This option is significantly incorrect, as the colonial shipping laws date back to the mid-19th century, not the early 20th century.

Q8. Answer: (c) Sound wave in air

The correct answer is Sound wave in air.

Key Points

• A longitudinal wave is a type of wave in which the particles of the medium move parallel to the direction of wave propagation.
• Sound waves in air are a classic example of longitudinal waves because the air particles oscillate back and forth along the same direction in which the sound wave is traveling.
• The regions of compression (high pressure) and rarefaction (low pressure) are formed due to the oscillation of air particles.
• Sound waves require a medium for propagation; they cannot travel in a vacuum.
• Examples of longitudinal waves include sound waves in solids, liquids, and gases, as well as seismic P-waves.
• Longitudinal waves are characterized by properties such as wavelength, frequency, amplitude, and speed.
• They play a crucial role in various applications, including communication technologies, sonar systems, and medical ultrasound.

Additional Information

• Water wave on surface
• Water waves are an example of surface waves, which are a combination of longitudinal and transverse motion.
• In water waves, particles move in circular or elliptical paths, creating both forward and backward motion.
• These waves are commonly observed on the surface of oceans, lakes, and other water bodies.
• Light wave in vacuum
• Light waves are electromagnetic waves and are transverse in nature.
• They do not require a medium for propagation and can travel through a vacuum.
• Light waves have both an electric field and a magnetic field oscillating perpendicular to each other and the direction of wave propagation.
• Radio wave during transmission
• Radio waves are also a type of electromagnetic wave and are transverse in nature.
• They are used in various applications, such as communication systems, broadcasting, and radar.
• Like light waves, they can propagate through a vacuum.

Q9. Answer: (c) Dr. KS Chauhan

The correct answer is Dr. KS Chauhan.

Key Points

• The book ‘Parliament: Powers, Functions & Privileges; A Comparative Constitutional Perspective’ was authored by Dr. KS Chauhan.
• This book was launched by the former Vice-President of India, Jagdeep Dhankhar, in January 2025.
• It discusses the powers, functions, and privileges of the Parliament of India and provides a comparative perspective with other countries' constitutional frameworks.
• The book is particularly significant for understanding the role and responsibilities of the Indian Parliament in the context of democracy and governance.

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• It is a valuable resource for researchers, academicians, and students studying the Indian Constitution and political system.

Additional Information

• MJ Akbar

• MJ Akbar is a renowned Indian journalist, author, and politician.

• He has authored several books, including 'India: The Siege Within' and 'The Shade of Swords'.

• His works primarily focus on Indian politics, history, and international relations.

• Dr. Rajen Saikia

• Dr. Rajen Saikia is an academician and author specializing in Indian history and culture.

• His notable works include writings on the history and socio-cultural developments of Assam.

• K Natwar Singh

• K Natwar Singh is a veteran Indian diplomat, politician, and writer.

• He has penned several books, including his autobiography, 'One Life is Not Enough', which provides insights into Indian politics and diplomacy.

• He served as the External Affairs Minister of India from 2004 to 2005.

Q10. Answer: (c) Calcination

The Correct answer is Calcination.

Key Points

• Calcination is a thermal process used in metallurgy to convert carbonate ores into metal oxides.

• It involves heating the ore in the absence of air, or a limited supply of air, which prevents the ore from melting.

• The process removes volatile substances, water, and organic matter from the ore and decomposes carbonate ores into oxides.

• An example of calcination is the conversion of calcium carbonate ($CaCO_3$) to calcium oxide (CaO) and carbon dioxide (CO_2).

• Calcination is commonly used for ores like limestone, dolomite, and magnesite.

• This process is crucial for purifying ores and preparing them for further reduction or extraction methods in metallurgy.

Additional Information

• Calcification

• Calcification is a term used in biology and medicine, referring to the accumulation of calcium salts in tissues, often causing hardening.

• This process is unrelated to metallurgy and does not involve heating ores or converting them to oxides.

• Chlorination

• Chlorination is a metallurgical process used for extracting metals like gold by reacting them with chlorine gas.

• This method is employed in cases where metals form stable chlorides, but it is not related to the conversion of carbonate ores into oxides.

• Carbonation

• Carbonation refers to the process of dissolving carbon dioxide in liquids, commonly used in the production of carbonated beverages.

• This term does not apply to metallurgical processes and is unrelated to the heating of ores.

Q11. Answer: (c) JIMEX

The correct answer is JIMEX.

Key Points

• JIMEX stands for Japan-India Maritime Exercise.

• This exercise is a bilateral naval exercise conducted between the Indian Navy and the Japan Maritime Self-Defense Force (JMSDF).

• The exercise aims to strengthen the maritime cooperation between the two countries and enhance interoperability.

• INS Shivalik, a multi-role stealth frigate of the Indian Navy, participated in JIMEX before heading towards the RIMPAC (Rim of the Pacific Exercise).

• JIMEX focuses on anti-submarine warfare, air defense, maritime operations, and surface warfare drills.

• The exercise showcases the advanced capabilities and professionalism of both the Indian Navy and JMSDF.

• This collaboration highlights the commitment of India and Japan towards maintaining regional security and stability in the Indo-Pacific region.

Additional Information

• AUSINDEX

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• AUSINDEX refers to the bilateral maritime exercise conducted between the Indian Navy and the Royal Australian Navy.
• The exercise focuses on enhancing interoperability, sharing best practices, and conducting joint maritime operations.
• This exercise is part of the strategic partnership between India and Australia.
• INDRA
• INDRA is a joint exercise conducted between the Indian Armed Forces and the Russian Armed Forces.
• The exercise covers multiple domains including military drills, counter-terrorism operations, and maritime exercises.
• It highlights the deep-rooted defense cooperation between India and Russia.
• SLINEX
• SLINEX refers to the Sri Lanka-India Naval Exercise.
• This maritime exercise aims to enhance bilateral cooperation and interoperability between the Indian Navy and the Sri Lanka Navy.
• SLINEX focuses on anti-piracy operations, humanitarian assistance, and disaster relief (HADR).

Q12. Answer: (d) limestone

The Correct answer is limestone.

Key Points

• The availability of limestone is a crucial factor in determining the location of cement plants.
• Limestone is the primary raw material used in the production of cement due to its high calcium carbonate content.
• Cement production involves the calcination of limestone to form lime, which is then mixed with other materials such as clay and sand to produce cement.
• Limestone deposits are found in abundance in various regions, including Madhya Pradesh, Rajasthan, Andhra Pradesh, and Gujarat in India.
• The proximity to limestone quarries reduces transportation costs, making cement production more economical.
• Cement plants are strategically located near limestone reserves to ensure a steady supply of raw material and minimize operational costs.
• Limestone is also used in other industries, such as steel production, agriculture, and construction, but its predominant use is in cement manufacturing.
• The chemical properties of limestone, including its composition and purity, greatly influence the quality of cement produced.

Additional Information

• Bauxite
• Bauxite is the principal ore of aluminum and is primarily used in the production of aluminum metal.
• It is not a significant raw material for cement production but is used in industries like aerospace, construction, and packaging.
• Major bauxite deposits are found in states such as Odisha, Gujarat, Maharashtra, and Jharkhand in India.
• Cotton
• Cotton is a natural fiber used extensively in the textile industry for producing fabrics.
• Cotton has no relevance to cement manufacturing.
• India is one of the largest producers of cotton, with key cotton-growing states including Gujarat, Maharashtra, Punjab, and Karnataka.
• Iron Ore
• Iron ore is a critical raw material used in steel production.
• It is not a primary material for cement production but plays a vital role in the construction and infrastructure industries.
• India has significant iron ore reserves in states like Odisha, Jharkhand, Chhattisgarh, and Karnataka.

Q13. Answer: (d) PV Narasimha Rao

The correct answer is PV Narasimha Rao.

Key Points

• PV Narasimha Rao was the 9th Prime Minister of India, serving from 1991 to 1996.
• He is often referred to as the "Father of Indian Economic Reforms" for initiating the Liberalization, Privatization, and Globalization (LPG) reforms in India.
• In 1991, India was facing a severe economic crisis characterized by a balance of payments crisis, depleting foreign exchange reserves, and high inflation.
• To address these challenges, Rao, along with his Finance Minister Dr. Manmohan Singh, introduced a series of structural reforms to liberalize the Indian economy.
• The reforms included dismantling the License Raj, allowing foreign direct investment (FDI), reducing import tariffs, and

overhauling the tax system.

• These reforms opened the Indian economy to global markets, leading to rapid economic growth, increased investment, and reduced fiscal deficits.

• Under his leadership, India transitioned from a state-controlled economy to a market-driven one.

• His reforms are considered a turning point in India's economic history, laying the foundation for the country's sustained growth in subsequent decades.

Additional Information

• Rajiv Gandhi

• Rajiv Gandhi was the 6th Prime Minister of India, serving from 1984 to 1989.

• He introduced several technological and educational reforms, including the promotion of information technology and telecommunication.

• However, he was not directly involved in the 1991 economic reforms.

• Indira Gandhi

• Indira Gandhi was the 3rd Prime Minister of India, serving for two terms (1966–1977 and 1980–1984).

• She is known for policies like the nationalization of banks and the implementation of the Green Revolution.

• Her economic policies were more focused on a socialist framework rather than liberalization.

• Atal Bihari Vajpayee

• Atal Bihari Vajpayee was the 10th Prime Minister of India, serving in three terms, with his most notable term being from 1998 to 2004.

• He introduced several economic reforms, including the Golden Quadrilateral highway project and disinvestment of public sector units, but these came much later than the 1991 reforms.

Q14. Answer: (d) Input, Processing, Output

The Correct answer is Input, Processing, Output.

Key Points

• A computer system is primarily based on three fundamental components: Input, Processing, and Output.

• Input: This component helps in feeding data or instructions into the computer system through input devices such as a keyboard, mouse, scanner, or microphone.

• Processing: The central processing unit (CPU) acts as the brain of the computer, performing calculations and logical operations to process the input data.

• Output: After processing, the computer system provides results or information through output devices such as monitors, printers, or speakers.

• This cycle of Input, Processing, and Output forms the core of all computer operations and is fundamental to its functioning.

• These components enable the computer to perform various tasks such as data computation, storage, and retrieval.

Additional Information

• CPU, Scanner, Air Conditioner

• The CPU (Central Processing Unit) is a key part of the computer system responsible for data processing.

• A scanner is an input device used to digitize physical documents or images but is not a primary component of a computer system.

• An air conditioner is not related to the computer system. It is used for cooling and maintaining temperature but has no direct role in the functioning of a computer.

• Monitor, USB, Light

• A monitor is an output device that displays processed information visually.

• A USB is a storage device or connector used to transfer data but is not a fundamental computer system component.

• Light is not a part of the computer system; it may refer to indicators or lighting used externally.

• Mouse, CPU, Mobile

• A mouse is an input device used for pointing and selecting but is not one of the primary system components.

• The CPU is a vital processing component of the computer system.

• A mobile device is not part of the computer system's basic components; it is a separate technology used for communication and computing.

Q15. Answer: (b) Orographic rainfall

The Correct answer is Orographic rainfall.

Key Points

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• Orographic rainfall occurs when moist air is forced to ascend due to the presence of a mountain barrier.
• As the air rises, it cools and condenses, forming clouds and resulting in precipitation on the windward side of the mountain.
• The leeward side of the mountain, also known as the rain shadow region, receives significantly less rainfall.
• This type of rainfall is common in areas with prominent mountain ranges, such as the Western Ghats in India, the Rocky Mountains in North America, and the Andes in South America.
• Orographic rainfall plays a crucial role in shaping the climate and vegetation of mountainous regions.
• It is one of the three main types of rainfall, alongside cyclonic and convectional rainfall.

Additional Information

• Cyclonic rainfall
• Cyclonic rainfall occurs due to the interaction of cold air masses and warm air masses, leading to the formation of cyclones.
• This type of rainfall is associated with low-pressure systems and is common in regions experiencing temperate cyclones or tropical cyclones.
• Convectional rainfall
• Convectional rainfall occurs when the sun heats the earth's surface, causing the air to rise, cool, and condense.
• This type of rainfall is common in equatorial regions and during the summer months.
• It is typically associated with short, intense showers or thunderstorms.
• Frontal rainfall
• Frontal rainfall occurs when a warm air mass meets a cold air mass, leading to condensation and precipitation along the front.
• This type of rainfall is common in mid-latitude regions and is associated with the movement of weather fronts.

Q16. Answer: (b) Speaker

The Correct answer is Speaker.

Key Points

• A speaker is a device used to convert digital signals into sound waves, enabling audio output.
• Digital signals are processed by the speaker's internal components, including a digital-to-analog converter (DAC) and an amplifier.
• Speakers are widely used in various devices such as computers, televisions, smartphones, and audio systems for sound reproduction.
• They are classified into different types based on their design, size, and application, including woofers, tweeters, and subwoofers.
• Modern speakers often include wireless connectivity options such as Bluetooth and Wi-Fi for seamless integration with devices.
• Speakers play a crucial role in applications like music playback, video watching, gaming, and voice communication.
• The functionality of speakers depends heavily on their quality and frequency response, which determines how accurately they reproduce sound.

Additional Information

• Printer
• A printer is a hardware device used to convert digital documents or images into physical form on paper or other media.
• Printers are commonly classified into types such as inkjet, laser, dot matrix, and thermal printers.
• They are used primarily for office tasks, personal use, and industrial applications.
• Microphone
• A microphone is a device used to convert sound waves into electrical signals.
• It is commonly used in audio recording, communication systems, and public address systems.
• Microphones have various types, including dynamic, condenser, ribbon, and lavalier microphones, depending on their application.
• Monitor
• A monitor is an output device used to display visual information from a computer or other digital sources.
• Monitors are available in various types, including LED, LCD, OLED, and CRT monitors.
• They are essential for tasks like graphical design, gaming, video editing, and general computing.

Q17. Answer: (b) China

The correct answer is China.

Key Points

• The Asian Winter Games is a multi-sport event that features winter sports disciplines and is organized by the Olympic Council of Asia (OCA).

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• China will serve as the host for the 2025 Asian Winter Games.

• The event will take place in Saudi Arabia's $500 billion futuristic city project, NEOM, located in the northwestern part of the country.

• This will mark a significant moment as it is the first time the Asian Winter Games will be held in a desert region, specifically in an artificial winter sports facility being developed in NEOM.

• The NEOM project includes the development of a ski village and other facilities suitable for hosting winter sports despite the region's arid climate.

• China has been a prominent player in hosting international sports events, including the 2022 Winter Olympics in Beijing, which showcased its ability to organize world-class winter sports competitions.

Additional Information

• Kazakhstan

• Kazakhstan is a country in Central Asia and has hosted the Asian Winter Games before in the year 2011. The event was held in the cities of Astana and Almaty.

• Kazakhstan is known for its cold climate, especially in the winter, and has well-developed winter sports facilities.

• Japan

• Japan has hosted the Asian Winter Games multiple times, including the inaugural event in 1986.

• Notable cities like Sapporo have been major venues for winter sports due to their snowy climates and infrastructure.

• South Korea

• South Korea has also hosted the Asian Winter Games. The event was held in Gangwon Province in 1999.

• The country is internationally recognized for its winter sports infrastructure, especially after hosting the 2018 PyeongChang Winter Olympics.

Q18. Answer: (c) Justice (Retd.) Dinesh Maheshwari

The correct answer is Justice (Retd.) Dinesh Maheshwari.

Key Points

• Justice (Retd.) Dinesh Maheshwari was appointed as the Chairperson of the 23rd Law Commission of India in April 2025.

• The Law Commission of India is a statutory body that advises the government on legal reforms and improvements in laws.

• Justice Maheshwari is a retired judge of the Supreme Court of India. He served on the bench from 2018 to 2023.

• His tenure in the judiciary was marked by his judgments on constitutional and civil matters.

• The 23rd Law Commission focuses on examining existing laws in India and recommending amendments or new legislation where necessary.

• One of the primary aims of the Law Commission under his leadership is to address legal challenges and aid the government in making laws more effective and relevant to the current scenario.

Additional Information

• Justice (Retd.) Ranjan Gogoi

• Justice Gogoi served as the 46th Chief Justice of India (CJI) from October 2018 to November 2019.

• He is known for his role in landmark cases like the Ayodhya land dispute and the Rafale deal.

• After retirement, he was nominated to the Rajya Sabha by the President of India in March 2020.

• Justice (Retd.) AK Sikri

• Justice Sikri served as a judge in the Supreme Court of India from 2013 to 2019.

• He is recognized for his expertise in constitutional law and arbitration.

• Post-retirement, he has been involved in various international arbitration panels.

• Justice (Retd.) Kurian Joseph

• Justice Kurian Joseph served in the Supreme Court of India from 2013 to 2018.

• He is known for his judgments on issues related to family law, minority rights, and constitutional matters.

• Justice Joseph has been an advocate for judicial transparency and accountability.

Q19. Answer: (b) Rejection of the doctrine of Karma

The Correct answer is Rejection of the doctrine of Karma.

Key Points

• The doctrine of Karma is a fundamental principle in Jainism that teaches the relationship between a person's actions and their consequences.

• In Jain philosophy, Karma is considered a subtle matter that binds the soul due to one's actions, thoughts, and desires.

• Jainism emphasizes the importance of liberating the soul from the bondage of Karma through ethical behavior, self-discipline,

and spiritual practices.

• The rejection of the doctrine of Karma is not consistent with Jain principles, as Karma serves as the foundation for understanding the cycle of birth, death, and rebirth (Samsara).

• Jainism encourages individuals to practice right faith, right knowledge, and right conduct to overcome the effects of Karma and attain liberation (Moksha).

Additional Information

• The whole world, including stone and water, has life

• Jainism teaches the concept of Universal Consciousness, which states that every entity, animate or inanimate, possesses some form of life or soul.

• Even elements like stone and water are believed to have souls according to Jain cosmology.

• This principle highlights Jainism's emphasis on respect for all forms of life and its strict practice of non-violence (Ahimsa).

• Practice of non-injury to living beings

• This principle is referred to as Ahimsa, which is central to Jain ethical conduct.

• Jains avoid causing harm to any living being, whether through thought, speech, or action.

• Ahimsa influences dietary practices, professions, and daily activities to ensure minimal harm to other life forms.

• Monastic life is the only way to salvation

• In Jainism, monastic life is considered the most effective path to achieve liberation (Moksha).

• Monks and nuns follow strict rules of conduct, renouncing worldly attachments and practicing severe austerities.

• However, laypersons can also progress spiritually by following Jain principles and accumulating positive Karma.

Q20. Answer: (a) Maldives

The Correct answer is Maldives.

Key Points

• The Maldives is an island nation located in the Indian Ocean, southwest of India and Sri Lanka.

• The Maldives lies south of the Lakshadweep Islands, which are part of India.

• It is composed of 1,192 coral islands grouped into 26 atolls, stretching over approximately 298 square kilometers.

• The Maldives is famous for its white sandy beaches and crystal-clear waters, making it a popular tourist destination worldwide.

• The country’s capital is Malé, which is the most populated city in the Maldives.

• The Maldives has a rich marine ecosystem, with a variety of coral reefs, fish species, and marine life.

• The economy of Maldives is heavily dependent on tourism and fisheries.

• Its geographical location makes it vulnerable to climate change, especially rising sea levels.

• The Maldives is also known for its underwater tourism activities, such as snorkeling and scuba diving.

Additional Information

• Andaman Islands

• The Andaman Islands are located in the Bay of Bengal and are part of the Union Territory of India known as the Andaman and Nicobar Islands.

• They are located to the east of mainland India, not south of Lakshadweep.

• The islands are known for their tribal groups, biodiversity, and pristine beaches.

• Port Blair is the capital of the Andaman Islands.

• Sri Lanka

• Sri Lanka is an island nation in the Indian Ocean, located to the south of India.

• It is situated southeast of the Lakshadweep Islands, not directly south.

• Sri Lanka is known for its rich cultural heritage, tea plantations, and ancient ruins such as Anuradhapura and Sigiriya.

• The capital of Sri Lanka is Colombo, and the administrative capital is Sri Jayawardenepura Kotte.

• Mauritius

• Mauritius is an island nation located in the Indian Ocean, east of Madagascar.

• It is not geographically close to Lakshadweep Islands.

• The country is famous for its lagoon beaches, coral reefs, and volcanic interior.

• Port Louis is the capital of Mauritius.

Q21. Answer: (b) Mixed Martial Arts

The Correct answer is Mixed Martial Arts.

Key Points

• Mixed Martial Arts (MMA) is a full-contact combat sport that incorporates techniques from various martial arts disciplines.

• MMA allows fighters to use striking, grappling, and ground-fighting techniques from sports like boxing, wrestling, judo, Brazilian jiu-jitsu, and Muay Thai.

• It is regulated by organizations like the Ultimate Fighting Championship (UFC), which is the largest MMA organization globally.

• MMA has grown immensely in popularity worldwide, including in India, where fighters like Puja Tomar have showcased their talent on international platforms.

• Puja Tomar's victory at the UFC marks a significant milestone for Indian women in combat sports and demonstrates the growing success of MMA athletes from India.

• The sport emphasizes discipline, physical fitness, and mental toughness, making it one of the most challenging competitive sports.

• The UFC organizes events globally, bringing together fighters from various backgrounds to compete in MMA bouts.

Additional Information

• Wrestling

• Wrestling is one of the oldest forms of combat sports and involves grappling techniques to pin or take down the opponent.

• It is divided into styles like freestyle wrestling and Greco-Roman wrestling.

• Wrestling is a popular Olympic sport and has a rich tradition in India, with athletes like Sushil Kumar and Bajrang Punia achieving international success.

• Boxing

• Boxing is a combat sport focused on striking techniques using fists.

• Boxers wear protective gloves and compete in a ring under strict rules and regulations.

• India has produced renowned boxers such as Mary Kom and Vijender Singh.

• Unlike MMA, boxing does not involve grappling or ground-fighting techniques.

• Judo

• Judo is a Japanese martial art and Olympic sport that focuses on grappling techniques.

• The goal in judo is to throw the opponent to the ground, immobilize them, or force them to submit using joint locks or chokeholds.

• Judo emphasizes discipline, control, and technique over brute strength.

• India has made its mark in judo with athletes competing in international events like the Olympics and Asian Games.

Q22. Answer: (d) Mathura

The Correct answer is Mathura.

Key Points

• Hema Malini is an Indian actress, politician, and former Member of Parliament.

• She was elected to the Lok Sabha from the Mathura parliamentary constituency, located in the state of Uttar Pradesh.

• Mathura is famously known as the birthplace of Lord Krishna and is a significant cultural and religious site in India.

• Hema Malini represents the Bharatiya Janata Party (BJP) and has actively participated in matters concerning women's empowerment.

• She was appointed as a Member of the Committee on the Empowerment of Women in April 2025, which works towards addressing issues related to gender equality and women's welfare.

• Uttar Pradesh, where Mathura is situated, is the most populous state in India and holds substantial political importance.

Additional Information

• Bareilly

• Bareilly is located in the state of Uttar Pradesh and is known for its Bamboo market and Zari work.

• The city is often referred to as the "Nath Nagri" due to the presence of several Shiva temples.

• Bareilly does not hold political relevance for Hema Malini as it is not her constituency.

• Agra

• Agra is famous for the Taj Mahal, one of the Seven Wonders of the World.

• It is located in Uttar Pradesh and is an important tourist destination.

• Agra is not associated with Hema Malini's political career as she does not represent this constituency.

• Meerut

• Meerut is a city in Uttar Pradesh known for its historical significance during the Indian Rebellion of 1857.

• The city is famous for its sports goods manufacturing industry.

• Hema Malini does not represent Meerut in the Lok Sabha.

Q23. Answer: (c) Operation Polo

The correct answer is Operation Polo.

Key Points

• Operation Polo was a military operation conducted by the Indian Armed Forces in 1948.

• The operation was aimed at integrating the Princely State of Hyderabad into the Indian Union.

• The state of Hyderabad, under the rule of the Nizam, had refused to join India after independence in 1947.

• It was a five-day operation conducted between 13th September and 17th September 1948.

• The operation resulted in the defeat of the Nizam's forces and the annexation of Hyderabad into India.

• Major-General J.N. Chaudhuri led the Indian Army during this operation.

• The successful execution of Operation Polo marked the end of the Nizam's rule in Hyderabad.

• The operation was also referred to as the "Police Action" by the Government of India.

• Hyderabad officially became a part of India on 17th September 1948, which is now celebrated as Hyderabad Liberation Day.

Additional Information

• Operation Shield

• This name does not correspond to any specific historical operation related to the annexation of Hyderabad or the Indian independence movement.

• The term may refer to hypothetical or fictional operations in other contexts but is not relevant to the integration of Hyderabad.

• Operation Peace

• This term is generic and does not denote any specific historical event in Indian history.

• It may refer to peacekeeping missions or initiatives in other contexts but not to the integration of Hyderabad.

• Operation Lotus

• The term Operation Lotus is associated with political strategies in modern Indian politics.

• It is unrelated to the historical context of Hyderabad's annexation in 1948.

Q24. Answer: (b) Article 243R

The correct answer is Article 243R.

Key Points

• Article 243R of the Indian Constitution provides for the composition of Municipalities.

• This article is a part of the 74th Constitutional Amendment Act, 1992, which focuses on the structure and governance of Urban Local Bodies (ULBs).

• Under Article 243R, municipalities are classified into three categories:

• Nagar Panchayat: For areas transitioning from rural to urban.

• Municipal Council: For smaller urban areas.

• Municipal Corporation: For larger urban areas.

• The article ensures that urban governance in India is decentralized and emphasizes the participatory role of citizens.

• It empowers the states to specify the details regarding the composition and governance of these municipalities.

Additional Information

• Article 243S

• Article 243S deals with the composition and functioning of Ward Committees within municipalities.

• It mandates the creation of Ward Committees in municipalities with a population exceeding 3 lakh.

• Ward Committees aim to ensure local-level participation in urban governance.

• Article 243X

• Article 243X empowers the state legislatures to frame laws regarding taxation, borrowing, and financial autonomy of municipalities.

• This article emphasizes the financial autonomy of Urban Local Bodies to sustain their governance and developmental activities.

Q25. Answer: (b) They are legally enforceable.

The Correct answer is They are legally enforceable.

Key Points

• Basic rules in a Constitution are primarily designed to ensure the proper functioning of a state or country.

• These rules become effective because they are legally enforceable, meaning they can be upheld and implemented through courts or governing bodies.

• Legal enforceability ensures that these rules are binding on all citizens, institutions, and governments, creating a framework for

governance.

• It establishes a system of checks and balances, ensuring that no one is above the law.

• For example, in India, the Constitution provides legal enforcement of fundamental rights through the judiciary, including the Supreme Court and High Courts.

• Legal enforceability safeguards justice, equality, and liberty, making the Constitution robust and effective.

• Without legal enforcement, the rules of the Constitution would merely be advisory and would lack the power to hold individuals or entities accountable.

Additional Information

• They are based on popular customs only

• Popular customs are practices or traditions widely followed by people in a society. However, they are not legally binding unless codified into law.

• Constitutional rules go beyond customs as they are formally written and enforceable by the judiciary and government institutions.

• Examples of customs include traditional ceremonies or cultural practices, which may influence laws but lack direct legal enforceability.

• They are a secret

• Constitutional rules are not kept secret; they are publicly accessible documents meant to guide governance and ensure transparency.

• In democratic systems, the Constitution is available to all citizens, promoting awareness and understanding of their rights and duties.

• They are not enforced

• If constitutional rules are not enforced, they lose their purpose and effectiveness.

• Enforcement is necessary to uphold legal order and protect the rights and freedoms of citizens.

Q26. Answer: (d) Wider availability of international brands

The Correct answer is Wider availability of international brands.

Key Points

• Globalisation refers to the increasing interconnectedness of economies, cultures, and societies, which has significantly influenced consumer choices in India.

• One prominent impact of globalisation is the wider availability of international brands in the Indian market, giving consumers access to a diverse range of products from across the globe.

• Foreign brands such as Nike, Adidas, Apple, Samsung, McDonald's, and Starbucks have established a strong presence in India, catering to the demand for globally recognized products.

• Indian consumers now have exposure to global trends, innovations, and quality standards, which have shaped their preferences and expectations.

• The opening up of the Indian economy in 1991 through economic reforms and liberalization facilitated the entry of international brands into the market.

• This trend has led to the diversification of consumer options, allowing individuals to choose products and services that align with their preferences and aspirations.

• Globalisation has also influenced the lifestyle, fashion choices, and consumption patterns of Indian consumers, making them more cosmopolitan.

• The Indian government’s policies, such as Foreign Direct Investment (FDI) in retail, have further boosted the presence of international brands in India.

• Overall, globalisation has expanded the scope of consumer choices, enabling individuals in India to access products that were once unavailable or limited to certain regions.

Additional Information

• Decline in foreign goods

• This is not correct because globalisation has resulted in an increase rather than a decline in the availability and consumption of foreign goods in India.

• Foreign goods have gained popularity due to higher quality, better branding, and aspirational value.

• Brands like Coca-Cola, Nestlé, and Unilever have seen substantial growth in India due to globalisation.

• Less brand diversity

• Globalisation has actually led to greater brand diversity, providing Indian consumers with a broader range of choices.

• From luxury brands like Gucci and Louis Vuitton to affordable options like H&M and Zara, consumers have access to diverse categories of products.

• Monopolisation of FMCG

• While globalisation has increased competition, it has not led to monopolisation in the Fast-Moving Consumer Goods (FMCG) sector.

• Instead, multiple brands, both local and international, coexist, offering consumers varied choices in this segment.

• Brands such as Colgate, Britannia, Dabur, and Procter & Gamble compete in this diversified market.

Q27. Answer: (a) Bombay

The Correct answer is Bombay.

Key Points

• The Prarthana Samaj was founded in the 19th century in Bombay.

• It was established in 1867 under the inspiration of Keshab Chandra Sen, a prominent leader of the Brahmo Samaj.

• The organization focused on promoting social reforms, including the abolition of caste discrimination and child marriage.

• The Prarthana Samaj believed in the spiritual equality of all castes and advocated for the upliftment of marginalized sections of society.

• It emphasized the importance of monotheistic worship and rejected rituals and idol worship.

• M.G. Ranade, a leading figure of the Prarthana Samaj, worked towards widow remarriage, education of women, and eradication of caste barriers.

• Members of the Prarthana Samaj were deeply influenced by the ideas of the Brahmo Samaj and Western thought, advocating for social and religious reforms.

• It became a significant movement in the Indian renaissance, especially in Maharashtra.

Additional Information

• Kanpur

• Kanpur is a major industrial city in the state of Uttar Pradesh, but it does not have any direct connection to the founding of the Prarthana Samaj.

• It is historically known for its role in the Indian freedom struggle and as a center of trade and commerce.

• Mysore

• Mysore is a city in Karnataka, known for its rich cultural heritage and historical significance.

• It played a prominent role during the reign of the Wodeyar dynasty but does not have any association with the Prarthana Samaj.

• Jodhpur

• Jodhpur, located in Rajasthan, is famous for its historical forts and palaces, such as the Mehrangarh Fort.

• It has no connection to the activities or founding of the Prarthana Samaj.

Q28. Answer: (c) Cato M Guldberg and Peter Waage

The Correct answer is Cato M Guldberg and Peter Waage.

Key Points

• Cato M Guldberg and Peter Waage were Norwegian chemists who formulated the law of mass action in the year 1864.

• The law of mass action is a fundamental principle in chemical kinetics that describes how the rate of a chemical reaction depends on the concentration of reactants.

• The law states that the rate of a chemical reaction is directly proportional to the product of the masses (or concentrations) of the reacting substances, each raised to a power corresponding to its stoichiometric coefficient.

• This law forms the basis for understanding chemical equilibria and is widely used in various fields such as chemistry, chemical engineering, and biochemistry.

• Their work laid the foundation for the development of modern chemical thermodynamics.

• Guldberg and Waage's contributions are considered pivotal in the field of chemistry and are still part of basic chemistry education worldwide.

Additional Information

• Fritz Haber and Carl Bosch

• Fritz Haber and Carl Bosch are known for the development of the Haber-Bosch process, which is a method used to synthesize ammonia from hydrogen and nitrogen gases.

• This process was pivotal in producing fertilizers, contributing significantly to agriculture.

• Carl Wilhelm Scheele and Humphry Davy

• Carl Wilhelm Scheele was a Swedish chemist who discovered oxygen independently of Joseph Priestley and also made several discoveries in chemistry, including chlorine and manganese.

• Humphry Davy, a British chemist, is best known for his discovery of alkali and alkaline earth metals and isolating elements such as sodium and potassium.

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• Georg Brandt and Torbern Bergman

• Georg Brandt was a Swedish chemist who is credited with discovering cobalt in 1735.

• Torbern Bergman was another Swedish chemist known for his work on chemical affinity and the development of a system of weights and measures in chemistry.

Q29. Answer: (c) 49

The Correct answer is 49.

Key Points

• The Jeevan Raksha Padak Series of Awards are prestigious awards given by the Government of India to recognize acts of courage and self-sacrifice in saving lives.

• These awards are conferred annually by the President of India on the occasion of Republic Day.

• The awards are categorized into three types: Sarvottam Jeevan Raksha Padak, Uttam Jeevan Raksha Padak, and Jeevan Raksha Padak.

• The awards are given to individuals who display outstanding bravery in saving lives under circumstances such as accidents, natural calamities, or other emergencies.

• In 2024, a total of 49 awards were conferred, showcasing the immense courage and selfless service of individuals across the country.

• The recipients of these awards include civilians and government officials who risk their lives to save others.

• These awards promote the spirit of heroism and inspire others to act courageously in times of danger.

Additional Information

• Option 1 (17)

• The number 17 does not correspond to the total Jeevan Raksha Padak awards conferred in 2024.

• It may represent a different category or unrelated data, but it is not the correct count of awards.

• Option 2 (9)

• The number 9 could relate to the count of awards in a specific category, but it does not reflect the overall total of Jeevan Raksha Padak awards.

• It is important to note that the awards are divided into three categories, and this number might pertain to one of them.

• Option 4 (23)

• The number 23 is incorrect in the context of the total Jeevan Raksha Padak awards conferred.

• This number might represent a separate statistic or count unrelated to the actual total.

Q30. Answer: (d) Qure.ai

The correct answer is Qure.ai.

Key Points

• Qure.ai is an Indian AI-powered healthcare startup known for its advanced diagnostic tools in the field of radiology.

• In May 2025, Qure.ai announced its plans to go public within the next two years to enhance its capabilities and expand its reach in the healthcare sector.

• The startup specializes in using artificial intelligence to analyze radiology images such as X-rays, CT scans, and MRIs to detect and diagnose various medical conditions.

• The company has developed diagnostic tools for critical conditions like tuberculosis, stroke, and lung diseases, making it a significant player in global healthcare innovation.

• Qure.ai's technology is particularly impactful in regions with limited access to healthcare professionals, providing quick and accurate diagnostics.

• The startup collaborates with hospitals and healthcare organizations worldwide, making its solutions available in multiple countries.

• Its public listing plans aim to raise funds for research, development, and expansion, allowing the company to serve a larger patient base and address broader health challenges.

Additional Information

• HealthifyMe

• HealthifyMe is a Bengaluru-based digital health and fitness app that focuses on diet and fitness tracking.

• It provides services like calorie tracking, exercise plans, and expert consultations to help users achieve their fitness goals.

• Niramai

• Niramai is a healthcare startup specializing in early breast cancer detection using a non-invasive, radiation-free, and accurate imaging technique.

• Its technology leverages thermal imaging and artificial intelligence for diagnosis.

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• 1mg

• 1mg is an e-pharmacy platform offering medicines, health products, and diagnostic services.

• It is one of India's leading online healthcare platforms, aiming to simplify access to healthcare.

Q31. Answer: (b) 42nd Amendment

The Correct answer is 42nd Amendment.

Key Points

• The 42nd Amendment of the Indian Constitution was enacted in 1976 during the Emergency period under the leadership of then Prime Minister Indira Gandhi.

• This amendment is often referred to as the "Mini Constitution" due to the significant changes it brought to the Constitution.

• Among its many provisions, it clarified Article 74, stating explicitly that the President of India must act in accordance with the advice of the Council of Ministers.

• The amendment aimed to enhance the power of the Executive and ensure the supremacy of the Cabinet headed by the Prime Minister.

• It also introduced changes to strengthen the principles of socialism, secularism, and the unity and integrity of the nation.

• The 42nd Amendment made it constitutionally binding for the President to abide by the advice rendered by the Council of Ministers, thus ensuring a parliamentary system of governance.

Additional Information

• 44th Amendment

• The 44th Amendment, enacted in 1978, sought to undo some of the provisions introduced by the 42nd Amendment.

• It restored the balance between the Executive and the Judiciary by ensuring that the Fundamental Rights could not be easily amended.

• This amendment also ensured that the President could send back the advice of the Council of Ministers for reconsideration but was still bound to act according to the Council's advice after reconsideration.

• 24th Amendment

• The 24th Amendment, passed in 1971, allowed Parliament to amend any part of the Constitution, including Fundamental Rights.

• It was introduced to counter the Supreme Court's judgment in the Golaknath case, where the court had ruled that Fundamental Rights could not be amended.

• 74th Amendment

• The 74th Amendment, enacted in 1992, dealt with the urban local governance and introduced provisions for municipalities in India.

• This amendment provided constitutional status to urban local bodies and laid down provisions for their functioning, elections, and powers.

• It has no connection to the President's role or the Council of Ministers.

Q32. Answer: (a) Peaceful petitions

The correct answer is Peaceful petitions.

Key Points

• In the early years, the Indian National Congress (INC) adopted a policy of moderation to achieve its objectives, primarily focusing on peaceful and constitutional methods.

• Congress leaders believed in persuading the British government through petitions, speeches, and resolutions to grant Indians limited self-governance.

• Leaders like Dadabhai Naoroji, Surendranath Banerjee, and Gopal Krishna Gokhale were prominent moderates who emphasized the use of dialogue, diplomacy, and reforms.

• The approach was based on the belief that the British government would respond to reason and justice if Indians showed their loyalty and expressed their demands peacefully.

• Key demands during this phase included civil service reforms, more representation for Indians in the legislative councils, and economic relief measures.

• This approach was reflective of the early phase (1885–1905) of the Indian freedom struggle, also known as the Moderate Phase.

• The Indian Councils Act of 1892 was one of the outcomes of these peaceful petitions, which provided for limited legislative reforms.

Additional Information

• Violent protests

• The approach of violent protests was not adopted by Congress leaders during the early years. Violent methods were associated with revolutionary groups like the Anushilan Samiti and Ghadar Party, which emerged later as a reaction to British repression and

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the inefficacy of peaceful methods.

• Foreign intervention

• The idea of seeking foreign intervention to gain self-governance was not a strategy pursued by the Congress leadership. However, during the later phases, leaders like Subhas Chandra Bose sought foreign support (e.g., from Axis powers) for India's independence.

• Revolutionary wars

• Revolutionary wars or armed uprisings were not part of the Congress strategy in its early years. Such actions were characteristic of movements like the 1857 Revolt or later revolutionary activities led by groups like the Hindustan Socialist Republican Association (HSRA).

Q33. Answer: (d) West Bengal

The Correct answer is West Bengal.

Key Points

• According to the Census of India 2011, West Bengal recorded the second-highest population density among Indian states.

• The population density of West Bengal was recorded as 1029 persons per square kilometer, making it one of the most densely populated regions in the country.

• Population density is defined as the number of people living per unit of area, typically per square kilometer, and is an important demographic indicator.

• The high population density in West Bengal can be attributed to factors such as urbanization, industrialization, fertile land, and the presence of major cities like Kolkata.

• The state is located in the eastern part of India and is known for its rich cultural heritage, major industries, and agricultural productivity.

• West Bengal has a significant contribution to the Indian economy through industries like jute, tea, chemicals, and leather.

• The Hooghly River basin and coastal regions have supported a dense population due to favorable living conditions and economic opportunities.

Additional Information

• Madhya Pradesh

• Madhya Pradesh, located in central India, is known as the "Heart of India" due to its geographical location.

• The state has a relatively low population density compared to West Bengal, primarily due to its large area and significant forest cover.

• It is rich in natural resources, biodiversity, and cultural heritage, making it famous for sites like Khajuraho, Sanchi, and Bandhavgarh National Park.

• Maharashtra

• Maharashtra is India's second-most populous state but does not rank as highly in population density due to its large geographical size.

• It is an economic powerhouse with industries like finance, technology, entertainment, and manufacturing.

• The state is home to Mumbai, India's financial capital, and Pune, a major IT and education hub.

• Uttar Pradesh

• Uttar Pradesh has the highest population in India as per the Census 2011.

• It is India's most populous state and is known for its historical significance, pilgrimage sites, and diverse culture.

• Major cities include Lucknow, Kanpur, Varanasi, and Agra.

Q34. Answer: (c) A record of endangered plant and animal species

The Correct answer is A record of endangered plant and animal species.

Key Points

• The Red Data Book is an internationally recognized document that provides a comprehensive record of species that are endangered, whether they are plants, animals, or fungi.

• The book is maintained by the International Union for Conservation of Nature (IUCN) and serves as a critical resource for conservationists and policymakers.

• This document highlights the threatened and near-threatened species, their current status, and the potential risks they face.

• It categorizes species into different risk levels, such as critically endangered, endangered, and vulnerable, based on their population trends and habitat conditions.

• It plays a key role in raising awareness about the need for species conservation and in guiding efforts to prevent extinction.

• The Red Data Book also acts as a reference for global efforts like the Convention on Biological Diversity (CBD) to ensure the protection of biodiversity.

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• It helps identify regions or ecosystems that need urgent attention and conservation measures.

Additional Information

• A list of protected forest areas

• This option refers to specific areas designated for conservation, such as national parks, wildlife sanctuaries, or biosphere reserves, but it is not the purpose of the Red Data Book.

• Protected forest areas are instead documented in lists maintained by national governments and organizations like the UNESCO World Heritage Centre.

• A compilation of forest conservation laws

• Forest conservation laws include legal frameworks like the Forest Conservation Act, 1980 (India) or international agreements like the Kyoto Protocol.

• These laws aim to regulate the use of forests and prevent deforestation, but they are not a part of the Red Data Book.

• A collection of tree species

• A collection of tree species may exist in botanical databases or floras, but the Red Data Book specifically focuses on endangered species, not on general cataloging of trees.

Q35. Answer: (b) One-third of all seats, including those reserved for SC/ST/OBC categories, are reserved for women, allowing...

The Correct answer is One-third of all seats, including those reserved for SC/ST/OBC categories, are reserved for women, allowing a seat to be reserved simultaneously for a woman and for an SC/ST/OBC candidate.

Key Points

• One-third reservation for women in local bodies ensures political representation and empowerment for women.

• Under this provision, one-third of all seats, including those reserved for Scheduled Castes (SC), Scheduled Tribes (ST), and Other Backward Classes (OBC), are allotted to women.

• This simultaneous reservation allows a seat to be reserved for both a woman and an SC/ST/OBC candidate, fostering inclusivity and diversity.

• This policy is implemented as per the provisions of the 73rd and 74th Constitutional Amendments, which introduced reservations for women in rural and urban local governance systems.

• The measure aims to encourage greater women's participation in governance and decision-making processes at grassroots levels.

• The reservation applies to both general seats and reserved-category seats, ensuring equitable representation across all categories.

Additional Information

• Option 1: Only one-third of the general (unreserved) seats are reserved for women, excluding reserved-category seats

• This option is incorrect because it limits the reservation to general seats only, excluding SC/ST/OBC seats, which contradicts the actual policy of inclusive reservation.

• Option 3: One-third reservation applies only to leadership positions such as Sarpanch or Chairperson

• This option is incorrect as the reservation policy applies to all seats in local bodies, not just leadership positions.

• Option 4: One-third reservation applies only to rural Panchayats and not to urban municipal bodies

• This option is incorrect because the reservation applies to both rural Panchayats and urban municipal bodies, as per the 73rd and 74th Constitutional Amendments.

Q36. Answer: (c) India

The Correct answer is India.

Key Points

• Operation Brahma was launched by India to provide aid and assistance in the aftermath of the earthquake in Myanmar.

• The operation was aimed at providing humanitarian relief, including rescue operations, medical aid, and essential supplies.

• This initiative showcases India's commitment to regional cooperation and its proactive role in disaster management.

• India's response to international crises often aligns with its policy of "Neighbourhood First", emphasizing support and collaboration with neighboring countries.

• India has previously conducted similar operations, such as Operation Maitri during the Nepal earthquake in 2015.

• The operation highlighted the involvement of Indian armed forces and specialized disaster management teams to ensure effective relief delivery.

• Myanmar shares a geographical border with India, making mutual assistance during crises a strategic move to maintain bilateral relations.

Additional Information

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• Bhutan

• Bhutan is a landlocked country located in the eastern Himalayas. It has a focus on Gross National Happiness rather than economic development.

• Bhutan is known for its strong environmental policies and is one of the world's carbon-negative countries.

• While Bhutan actively supports regional cooperation, it does not have a history of conducting large-scale disaster relief operations in other countries.

• Thailand

• Thailand is located in Southeast Asia and is known for its rich cultural heritage and tourism.

• Thailand has advanced disaster management capabilities, but it was not involved in Operation Brahma for Myanmar.

• The country has participated in regional cooperation initiatives but focuses more on its internal disaster preparedness plans.

• Cambodia

• Cambodia is a Southeast Asian country known for its historical significance, including the Angkor Wat temple complex.

• Cambodia has limited resources for conducting large-scale international disaster relief operations.

• It often receives aid from international partners during crises rather than launching operations itself.

Q37. Answer: (c) 12 years

The Correct answer is 12 years.

Key Points

• Under the Citizenship Act, 1955, citizenship by naturalisation can be granted to a foreign national who has been ordinarily residing in India for at least 12 years immediately preceding the application.

• This includes a requirement of 11 years of continuous residence and 1 year of residence immediately before applying.

• The Act defines several modes of acquiring Indian citizenship, including birth, descent, registration, and naturalisation.

• Naturalisation requires the applicant to demonstrate good character, adequate knowledge of a language specified in the Constitution, and intention to reside in India.

• The aim of this provision is to ensure that applicants have a strong connection with India before being granted citizenship.

• The eligibility criteria for naturalisation are outlined under Section 6 of the Citizenship Act, 1955.

Additional Information

• 5 years

• The period of 5 years is incorrect because it applies to certain specific cases under the Citizenship Act, such as cases involving registration of citizenship under special provisions.

• It is not the general condition for naturalisation.

• 7 years

• The 7-year criterion applies in cases of acquiring citizenship through registration under specific provisions of the Act, but not through naturalisation.

• 10 years

• While 10 years might seem close to the correct answer, the actual duration for naturalisation is specified as 12 years under the general conditions in the Act.

Q38. Answer: (a) Gandhinagar

The correct answer is Gandhinagar.

Key Points

• Gandhinagar is the capital city of Gujarat, India, and is known for its planned layout and urban development.

• The city is home to several significant institutions, including the Gujarat Legislative Assembly and various government offices.

• It is a hub for youth-centric programs, conferences, and summits due to its well-equipped infrastructure and connectivity.

• The BIMSTEC Youth Summit 2025 was organized to bring together youth representatives from member countries of the BIMSTEC (Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation).

• BIMSTEC includes countries such as Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka, and Thailand, aiming to enhance cooperation in areas like trade, connectivity, and culture.

• The summit focused on fostering regional collaboration, leadership skills, and youth empowerment among participants.

• Gandhinagar was chosen due to its strategic location, facilities, and historical relevance in hosting national and international events.

Additional Information

• Mumbai

• Mumbai, the financial capital of India, is known for its bustling economy and vibrant culture.

• It is home to major financial institutions like the Reserve Bank of India, Bombay Stock Exchange, and numerous multinational companies.

• Mumbai is not typically chosen for summits like the BIMSTEC Youth Summit, as such events often require quieter and organized venues.

• New Delhi

• New Delhi is the capital of India and the seat of the Indian government.

• It is a hub for international and national events like G20 summits, UN conferences, and political gatherings.

• While New Delhi is an ideal location for many large-scale events, Gandhinagar was chosen for the BIMSTEC Youth Summit, possibly due to its better suitability for youth-oriented programs.

• Bengaluru

• Bengaluru, also known as the Silicon Valley of India, is a hub for technology and innovation.

• The city is famous for its IT industry and start-up culture, attracting global attention.

• Although Bengaluru is suitable for tech-based events and conferences, Gandhinagar was selected for the BIMSTEC Youth Summit to emphasize regional cooperation and youth leadership.

Q39. Answer: (c) NABARD

The Correct answer is NABARD.

Key Points

• NABARD stands for National Bank for Agriculture and Rural Development.

• It was established in 1982 under the National Bank for Agriculture and Rural Development Act, 1981.

• NABARD is the apex body for rural credit in India and is tasked with providing credit and development assistance to the agricultural sector, rural infrastructure, and allied activities.

• It plays a crucial role in promoting agricultural growth and facilitating the development of rural areas.

• NABARD supports self-help groups (SHGs), farmer producer organizations (FPOs), and rural industries, enabling them to access financial aid and credit facilities.

• It is involved in the formulation of policies and strategies for agricultural development and financial inclusion in rural India.

• Refinancing institutions, cooperative banks, and regional rural banks are supported by NABARD to ensure the availability of agricultural credit.

• The organization also focuses on the implementation of government schemes for rural development, such as the Rural Infrastructure Development Fund (RIDF).

Additional Information

• RBI

• Reserve Bank of India (RBI) is India's central bank and regulatory body responsible for managing the country's monetary policy.

• Established in 1935 under the Reserve Bank of India Act, 1934.

• RBI oversees the functioning of commercial banks and financial institutions but is not directly involved in rural credit development like NABARD.

• It issues licenses to banks and regulates their operations while maintaining control over currency issuance.

• SIDBI

• Small Industries Development Bank of India (SIDBI) primarily focuses on the promotion, financing, and development of micro, small, and medium enterprises (MSMEs).

• Established in 1990, SIDBI plays a significant role in fostering entrepreneurship but is not specifically focused on rural credit.

• It provides financial assistance to MSMEs through direct and indirect lending programs.

• FCI

• Food Corporation of India (FCI) was established in 1965 under the Food Corporations Act, 1964.

• FCI is responsible for managing India's food security by ensuring the availability of food grains through procurement, storage, and distribution.

• Its primary role is to maintain buffer stocks of food grains and stabilize food prices but does not deal with rural credit.

Q40. Answer: (a) Maues (Moga)

The Correct answer is Maues (Moga).

Key Points

• Maues (Moga) was the first ruler of the Shaka dynasty in India.

• The Shakas were a group of Central Asian nomadic tribes who invaded India during the 2nd century BCE.

• Maues established his rule in the region of Gandhara (modern-day Pakistan and Afghanistan).

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• He is considered the founder of the Shaka dynasty in India and played a significant role in expanding Shaka influence in the Indian subcontinent.
• Maues is known for issuing coins with inscriptions in Greek and Kharosthi scripts, reflecting the cultural syncretism of his reign.
• The Shaka rulers are known for their contributions to Indian culture, including architecture, sculpture, and the promotion of trade.
• The Shaka dynasty eventually became part of the larger Kushan Empire, which further influenced Indian history.

Additional Information

• Nahapana
• Nahapana was a later ruler of the Shaka dynasty, known for his rule in western India, particularly in the region of Maharashtra and Gujarat.
• He issued numerous coins and inscriptions, which provide valuable historical insights into his reign.
• Nahapana was defeated by the Satavahana ruler Gautamiputra Satakarni, marking the decline of Shaka power in western India.
• Rudradaman I
• Rudradaman I was one of the most prominent rulers of the Western Kshatrapas, a branch of the Shaka dynasty.
• He is known for his patronage of art and culture, as well as his famous inscription at Junagadh, written in classical Sanskrit.
• Rudradaman I strengthened Shaka power in western India and initiated several public works, including repairing the Sudarshana Lake.
• Menander I
• Menander I, also known as Milinda, was a ruler of the Indo-Greek kingdom and not associated with the Shaka dynasty.
• He is famous for his dialogue with the Buddhist monk Nagasena, recorded in the text Milinda Panha.
• Menander was a significant figure in the spread of Greek cultural influence in India and the integration of Hellenistic and Indian traditions.

Q41. Answer: (d) -3

Shortcut Trick

Evaluate the terms mentally by applying the BODMAS rule:

=> $2^2 = 4$, $\sqrt{(8^2)} = 8$, $2\sqrt{4} = 4$

Substitute directly into the given expression:

=> $4 + 8 - 4 - 11 = -3$

Therefore The correct answer is −3.

Alternate Method

Given:

$2^2 + \sqrt{(8^2)} - 2\sqrt{4} - 11$

Concept Used:

BODMAS Rule: First evaluate Orders (powers and roots), then Division, Multiplication, Addition, and Subtraction in sequence.

Calculations:

=> $2^2 = 4$

=> $\sqrt{(8^2)} = \sqrt{64} = 8$

=> $\sqrt{4} = 2$

Substitute the evaluated terms back into the given expression:

=> $4 + 8 - 2 \times 2 - 11$

=> $4 + 8 - 4 - 11$

=> $12 - 15$

=> -3

Therefore The correct answer is −3.

Additional Information

BODMAS Rule

It dictates the correct order of mathematical operations to follow: Brackets, Orders (powers and roots), Division, Multiplication, Addition, and Subtraction.

Properties of Square Roots

The principal square root of a perfect square directly gives the absolute base value: $\sqrt{(x^2)} = |x|$.

Simplification of Surds

Expressions containing surds like $\sqrt{4}$ should be simplified into rational numbers (such as 2) before proceeding with addition or subtraction steps.

Q42. Answer: (c) 17

Shortcut Trick

The product of two consecutive positive integers is always close to the perfect square of the smaller number.

The nearest perfect square less than 272 is 256, which is 16^2.

The two consecutive integers are 16 and 17, as $16 \times 17 = 272$.

The greater of the two numbers is 17.

Therefore The correct answer is 17.

Alternate Method

Given:

The product of two consecutive positive natural numbers = 272

Formula Used:

Quadratic equation standard form: $ax^2 + bx + c = 0$

Calculations:

=> Let the smaller positive natural number be x.

=> The next consecutive natural number will be $(x + 1)$.

=> According to the problem, $x \times (x + 1) = 272$

=> $x^2 + x = 272$

=> $x^2 + x - 272 = 0$

=> We need to split the middle term such that the product is -272 and the sum is 1.

=> $x^2 + 17x - 16x - 272 = 0$

=> $x(x + 17) - 16(x + 17) = 0$

=> $(x - 16)(x + 17) = 0$

=> So, $x = 16$ or $x = -17$

=> Since the number must be a positive natural number, we reject -17 and take $x = 16$.

=> The greater number is $x + 1 = 16 + 1 = 17$.

Therefore The correct answer is 17.

Additional Information

Consecutive Numbers

Consecutive numbers are numbers that follow each other in order, from smallest to largest, without gaps. For natural numbers, the difference between consecutive terms is exactly 1 (e.g., n, n + 1, n + 2).

Quadratic Equation Roots

For a standard quadratic equation $ax^2 + bx + c = 0$, the nature of roots is determined by the discriminant $D = b^2 - 4ac$. The roots can be calculated using factorization or the formula: $x = (-b \pm \sqrt{D}) \div 2a$.

Q43. Answer: (a) 145

Shortcut Trick

Apply the BODMAS rule directly, solving from the innermost bracket outwards:

=> Round bracket and multiply: $5 \times (2 - 7) = 5 \times (-5) = -25$

=> Curly bracket: $\{27 - 25\} = 2$

=> Final division: $290 \div 2 = 145$

Therefore The correct answer is 145.

Alternate Method

Given:

Expression: $[290 \div \{27 + 5 \times (2 - 7)\}]$

Concept Used:

The BODMAS Rule is applied to correctly evaluate mathematical expressions in the exact order of Brackets, Orders, Division, Multiplication, Addition, and Subtraction.

Calculations:

=> $[290 \div \{27 + 5 \times (2 - 7)\}]$

=> Solving the round bracket first:

=> $[290 \div \{27 + 5 \times (-5)\}]$

=> Performing multiplication inside the curly bracket:

=> [290 ÷ {27 − 25}]

=> Solving the curly bracket:

=> [290 ÷ 2]

=> Performing final division:

=> 145

Therefore The correct answer is 145.

Additional Information

BODMAS Rule Priority

Always evaluate expressions in this exact order: Brackets → Of → Division → Multiplication → Addition → Subtraction.

Order of Brackets

When multiple brackets are present, solve them sequentially from innermost to outermost: Vinculum (Bar) → Round Brackets () → Curly Brackets {} → Square Brackets [].

Sign Rules in Multiplication

Multiplying a positive number by a negative number always yields a negative product (+a × −b = −ab).

Q44. Answer: (c) 26

Shortcut Trick

Divide the given number 81661 by the divisor 73 to find the remainder.

81661 ÷ 73 gives a quotient of 1118 and a remainder of 47.

To make it perfectly divisible, the smallest number to be added is the difference between the divisor and the remainder.

=> Required number = Divisor − Remainder = 73 − 47 = 26

Therefore The correct answer is 26.

Alternate Method

Given:

Number = 81661

Divisor = 73

Formula Used:

Dividend = (Divisor × Quotient) + Remainder

Smallest number to be added = Divisor − Remainder

Calculation:

=> First, we divide the given number 81661 by 73.

=> 81661 = 73 × 1118 + 47

=> Here, we observe that the remainder is 47.

=> If we subtract 47 from 81661, the resulting number (81614) will be perfectly divisible by 73.

=> However, the question asks for the smallest number to be added.

=> To reach the next multiple of 73, we must add the remaining difference to the remainder.

=> Required number to add = Divisor − Remainder

=> Required number = 73 − 47 = 26

=> Verification: 81661 + 26 = 81687, and 81687 ÷ 73 = 1119 (perfectly divisible).

Therefore The correct answer is 26.

Additional Information

Number to be Subtracted

To find the smallest number to be subtracted so that the number is completely divisible, the answer is simply the remainder itself.

Euclid's Division Lemma

For any two positive integers a and b, there exist unique integers q and r such that a = b × q + r, where 0 ≤ r < b.

Divisibility and Multiples

The distance to the next highest multiple of a divisor b from a given dividend a is always equal to b − r, where r is the remainder obtained when a is divided by b.

Q45. Answer: (c) 98°

Shortcut Trick

In ΔABC, sum of angles is 180° => angle BCA = 180° − (113° + 26°) = 41°.

Since BC || AD, alternate interior angles are equal => angle CAD = angle BCA = 41°.

In ΔACD, given AC = CD, angles opposite to equal sides are equal => angle ADC = angle CAD = 41°.

In ΔACD, sum of angles is 180° => angle ACD = 180° − (41° + 41°) = 98°.

Therefore The correct answer is 98°.

Alternate Method

A

B

C

D

113°

26°

41°

41°

41°

98°

Given:

BC || AD, AC = CD

angle ABC = 113° and angle BAC = 26°

Calculations:

=> In ΔABC, the sum of all interior angles is 180°

=> angle BCA = 180° − (angle ABC + angle BAC)

=> angle BCA = 180° − (113° + 26°) = 180° − 139° = 41°

=> Since BC || AD, the Alternate Interior Angles are equal.

=> angle CAD = angle BCA = 41°

=> In ΔACD, it is given that AC = CD. Thus, angles opposite to the equal sides are also equal.

=> angle ADC = angle CAD = 41°

=> In ΔACD, the sum of interior angles is 180°

=> angle ACD + angle CAD + angle ADC = 180°

=> angle ACD + 41° + 41° = 180°

=> angle ACD + 82° = 180°

=> angle ACD = 180° − 82° = 98°

Therefore The correct answer is 98°.

Additional Information

Trapezium Properties

A trapezium is a quadrilateral with at least one pair of parallel sides. The consecutive interior angles located between the parallel sides are always supplementary.

Alternate Interior Angles Theorem

When two parallel lines are cut by a transversal line, the alternate interior angles formed on opposite sides of the transversal are strictly equal to each other.

Isosceles Triangle Property

If any two sides of a triangle are equal in length, it forms an isosceles triangle. Consequently, the angles opposite to these equal sides will always be equal in measure.

Angle Sum Property

The sum of all three interior angles enclosed within any triangle universally adds up to exactly 180°.

Q46. Answer: (b) Rs. 2,880

Shortcut Trick

The discount amount can be directly calculated as a straight percentage of the marked price.

Discount = 9% of 32000

Discount = (9 ÷ 100) × 32000

Discount = 9 × 320 = 2880

Therefore The correct answer is Rs. 2,880.

Alternate Method

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Given:

Marked Price (Price of printer) = Rs. 32,000

Trade Discount percentage = 9%

Formula Used:

Discount Amount = Marked Price × (Discount Percentage ÷ 100)

Marked Price (MP)

Rs. 32,000

9% Discount

Discount Amount

Rs. 2,880

Discount = 9% of Rs. 32,000 = Rs. 2,880

Calculations:

=> Discount Amount = 32000 × (9 ÷ 100)

=> Discount Amount = 320 × 9

=> Discount Amount = 2880

Therefore The correct answer is Rs. 2,880.

Additional Information

Selling Price (SP)

Selling Price is the final amount at which the item is sold after deducting the discount. Formula: SP = Marked Price − Discount.

Successive Discounts

When two discounts of a% and b% are given successively, the equivalent single discount can be calculated using the formula: [a + b − (a × b ÷ 100)]%.

Trade Discount

A trade discount is a direct percentage reduction in the listed price (marked price) of an item, commonly provided by a manufacturer or wholesaler to a retailer.

Q47. Answer: (a) 5401/491 hours

Shortcut Trick

Total Work = LCM(14, 24, 17) = 2856 units.

Combined Efficiency = (2856 ÷ 14) + (2856 ÷ 24) + (2856 ÷ 17) = 204 + 119 + 168 = 491 units/hour.

Time taken together = Total Work ÷ Combined Efficiency = 2856 ÷ 491.

Time = 5 ^(401)/491 hours.

Therefore The correct answer is 5 ^(401)/491 hours.

Alternate Method

Given:

Time taken by Pipe A = 14 hours

Time taken by Pipe B = 24 hours

Time taken by Pipe C = 17 hours

Formula Used:

Total Time = Total Work ÷ Total Efficiency

Pipe	Time (hours)	Total Work	Efficiency
A	14	2856	204
B	24	119	
C	17	168	

Calculations:

=> Total Efficiency (A + B + C) = 204 + 119 + 168 = 491 units/hour

=> Time taken together = 2856 ÷ 491

=> Time = 5 ^(401)/491 hours

Therefore The correct answer is 5 ^(401)/491 hours.

Additional Information

Pipes & Cisterns Efficiency Concept

Total Work is generally assumed as the LCM of individual completion times to avoid complex fractional calculations. Efficiency is defined as the amount of work done per unit time.

Inlet and Outlet Rules

An inlet pipe contributes positive work (+), while an outlet pipe or leak contributes negative work (−). The net combined efficiency is always the algebraic sum of all active pipes operating simultaneously.

Q48. Answer: (d) 720

Shortcut Trick

When there is neither profit nor loss, absolute loss equals absolute profit.

CP1 × 10% = CP2 × 15% => CP1 : CP2 = 15 : 10 = 3 : 2

Total ratio parts = 3 + 2 = 5 parts

5 parts = Rs. 1200 => 1 part = Rs. 240

CP of the first frock (3 parts) = 3 × 240 = Rs. 720

Therefore The correct answer is Rs. 720.

Alternate Method

First Frock

Second Frock

−10%

+15%

0%

15

10

Ratio => 3 : 2

Total Parts = 5 => Rs. 1200

Given:

Total CP of two frocks = Rs. 1200

Loss on the first frock = 10%

Gain on the second frock = 15%

Overall transaction = No profit and no loss

Formula Used:

When overall outcome is 0% profit/loss, Loss Amount = Profit Amount.

Calculations:

Let the CP of the first frock be x.

Then, the CP of the second frock is (1200 − x).

=> Loss on 1st = Gain on 2nd

=> 10% of x = 15% of (1200 − x)

=> (10 ÷ 100) × x = (15 ÷ 100) × (1200 − x)

=> 10x = 15 × (1200 − x)

=> 10x = 18000 − 15x

=> 25x = 18000

=> x = 18000 ÷ 25 = 720

Therefore The correct answer is Rs. 720.

Additional Information

No Profit No Loss Case

When a transaction results in neither a net gain nor a net loss, the absolute financial loss incurred on one item exactly counterbalances the absolute financial gain on the other. Therefore, CP1 × Loss% = CP2 × Profit%.

Alligation Method for Profit and Loss

Applying the rule of alligation on profit and loss percentages directly yields the ratio of the Cost Prices (CP) of the respective items. Loss values are taken as negative, while profit values are positive.

Successive Percentage Change

If the price of a single item is changed successively by P% profit and L% loss, the net effect can be evaluated using the equivalent percentage formula: (P − L − (P×L)÷100)%.

Q49. Answer: (a) 12:10 p.m.

Shortcut Trick

Let the total distance be the LCM of 7 hours and 5 hours = 35 units.

Speed of Train A = 35 ÷ 7 = 5 units/hr and Speed of Train B = 35 ÷ 5 = 7 units/hr.

Distance covered by A alone in 2 hours (8:05 a.m. to 10:05 a.m.) = 5 × 2 = 10 units.

Time to cover the remaining 25 units together = 25 ÷ (5 + 7) = 25/12 hours = 2 hours 5 mins.

Meeting time = 10:05 a.m. + 2 hours 5 mins = 12:10 p.m.

Therefore The correct answer is 12:10 p.m.

Alternate Method

Station M

Station N

Meeting Point

12:10 p.m.

Total Distance = 35 units

Train A

8:05 a.m.

Train B

10:05 a.m.

Given:

Train A starts at 8:05 a.m. and reaches at 3:05 p.m.

Train B starts at 10:05 a.m. and reaches at 3:05 p.m.

Formula Used:

Speed = Distance ÷ Time

Time to meet = Remaining Distance ÷ Relative Speed

Calculations:

=> Total time taken by Train A = 7 hours

=> Total time taken by Train B = 5 hours

=> Let the total distance between station M and station N be 35 units (LCM of 7 and 5).

=> Speed of Train A = 35 ÷ 7 = 5 units/hr.

=> Speed of Train B = 35 ÷ 5 = 7 units/hr.

=> Distance traveled by Train A in 2 hours (8:05 a.m. to 10:05 a.m.) = 5 × 2 = 10 units.

=> Remaining distance when Train B starts = 35 − 10 = 25 units.

=> Relative speed = Speed of A + Speed of B = 5 + 7 = 12 units/hr.

=> Time taken to meet = 25 ÷ 12 hours = 2 hours and (1/12 × 60) minutes = 2 hours 5 minutes.

=> Meeting time = 10:05 a.m. + 2 hours 5 minutes = 12:10 p.m.

Therefore The correct answer is 12:10 p.m.

Additional Information

Relative Speed in Opposite Directions

When two bodies move towards each other, their relative speed is the sum of their individual speeds (S1 + S2).

Relative Speed in Same Direction

When two bodies move in the same direction, their relative speed is the difference of their individual speeds (|S1 − S2|).

Time and Speed Relationship

For a constant distance, speed is inversely proportional to the time taken (S prop. to 1/T).

Q50. Answer: (c) 158 cm2

Shortcut Trick

The total surface area of a cuboid is given by 2 × (lb + bh + hl).

Substitute the given dimensions directly into the formula.

Total Surface Area = 2 × (8 × 5 + 5 × 3 + 3 × 8)

Total Surface Area = 2 × (40 + 15 + 24) = 2 × 79

Therefore The correct answer is 158 cm².

Alternate Method

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Given:
Length (l) = 8 cm
Breadth (b) = 5 cm
Height (h) = 3 cm
8 cm
5 cm
3 cm
Total Surface Area = 158 cm2
Formula Used:
Total Surface Area of a Cuboid = 2 × (l × b + b × h + h × l)
Calculations:
=> Surface Area = 2 × (8 × 5 + 5 × 3 + 3 × 8)
=> Surface Area = 2 × (40 + 15 + 24)
=> Surface Area = 2 × (79)
=> Surface Area = 158 cm²
Therefore The correct answer is 158 cm².
Additional Information
Lateral Surface Area of Cuboid
LSA = 2 × h × (l + b), which calculates the area of the 4 vertical walls excluding the top and bottom faces.
Volume of Cuboid
Volume = l × b × h, representing the total 3-dimensional space capacity enclosed by the cuboid.
Diagonal of Cuboid
Length of the longest rod that can completely fit inside the cuboid = √(l² + b² + h²).

Q51. Answer: (d) 88/7

Shortcut Trick
Total work = LCM(22, 11, 8) = 88 units.
Efficiency of Priya = 88 ÷ 22 = 4 units/day.
Efficiency of Nisha = (Priya + Varsha + Nisha) − (Priya + Varsha) = (88 ÷ 8) − (88 ÷ 11) = 11 − 8 = 3 units/day.
Combined efficiency of Priya and Nisha = 4 + 3 = 7 units/day.
Time required by Priya and Nisha = 88 ÷ 7 days.
Therefore The correct answer is 88/7 days.
Alternate Method
Given:
Time taken by Priya = 22 days
Time taken by Priya and Varsha together = 11 days
Time taken by Priya, Varsha, and Nisha together = 8 days
Method Used:
Total Work = LCM of given days
Efficiency = Total Work ÷ Number of Days

Person	Days	Total Work	Efficiency
Priya	22	88	4
Priya + Varsha	11	8	
Priya + Varsha + Nisha	8	11	

Calculations:
=> Efficiency of Nisha = (Efficiency of Priya, Varsha and Nisha) − (Efficiency of Priya and Varsha)
=> Efficiency of Nisha = 11 − 8 = 3 units/day
=> Combined efficiency of Priya and Nisha = Efficiency of Priya + Efficiency of Nisha
=> Combined efficiency = 4 + 3 = 7 units/day
=> Time taken by Priya and Nisha together = Total Work ÷ Combined Efficiency

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=> Time taken = 88 ÷ 7 days

Therefore The correct answer is 88/7 days.

Additional Information

Pipes & Cisterns

Works on the same concept as Time and Work. Inlet pipes have positive efficiency, while outlet pipes (leaks) have negative efficiency.

Alternate Day Work

When individuals work on alternate days, find the combined work done in one complete cycle (e.g., 2 days) and multiply by the maximum possible integer before calculating the remaining work manually.

Work & Wages

Wages are always distributed in the direct ratio of the total work done by each person. If they work for the same number of days, wages are directly proportional to their efficiencies.

Q52. Answer: (c) -3

Shortcut Trick

Divide the entire equation by 5 directly to simplify the terms.

=> $(5x^2 - 7) - (5x^2 + 2x - 4) = 3$

=> $5x^2 - 7 - 5x^2 - 2x + 4 = 3$

=> $-2x - 3 = 3$

=> $-2x = 6$ => $x = -3$

Therefore The correct answer is −3.

Alternate Method

Given:

$5(5x^2 - 7) - 5(5x^2 + 2x - 4) = 15$

Calculation:

=> Expand the brackets on the left side.

=> $25x^2 - 35 - 25x^2 - 10x + 20 = 15$

=> The $25x^2$ terms cancel out completely.

=> $-10x - 15 = 15$

=> Add 15 to both sides.

=> $-10x = 15 + 15$

=> $-10x = 30$

=> $x = 30 \div (-10)$

=> $x = -3$

Therefore The correct answer is −3.

Additional Information

Linear Equation in One Variable

An equation of the form $ax + b = 0$ where $a \neq 0$. It always has exactly one unique solution.

BODMAS Rule

Always simplify brackets first, then calculate orders (powers/roots), followed by division, multiplication, addition, and finally subtraction.

Quadratic vs Linear

Although the given equation initially contains x^2 terms, they cancel out entirely during simplification, reducing the expression to a basic linear equation.

Q53. Answer: (b) Rs. 1,900

Shortcut Trick

Total Simple Interest percentage = Rate × Time = 4% × 5 = 20%

Total Amount = Principal (100%) + Simple Interest (20%) = 120% of Principal

=> 120% of P = 2280

=> P = (2280 × 100) ÷ 120

=> P = 1900

Therefore The correct answer is Rs. 1,900.

Alternate Method
Given:
Amount (A) = Rs. 2,280
Rate of Interest (R) = 4% per annum
Time (T) = 5 years
Principal = P Amount = Rs. 2280 Time = 5 yrs, Rate = 4% p.a. + 20% Simple Interest Amount = P + (20% of P) = 120% of P
Formula Used:
A = P × [1 + (R × T) ÷ 100]
Calculations:
=> 2280 = P × [1 + (4 × 5) ÷ 100]
=> 2280 = P × [1 + 20 ÷ 100]
=> 2280 = P × [1 + 0.20]
=> 2280 = P × 1.20
=> P = 2280 ÷ 1.20
=> P = 1900
Therefore The correct answer is Rs. 1,900.
Additional Information
Simple Interest (SI) Formula
Interest is calculated strictly on the initial principal amount: SI = (P × R × T) ÷ 100.
Compound Interest (CI) Formula
Interest is calculated on the principal along with accumulated interest: A = P × (1 + R ÷ 100)^T.
Difference Between SI and CI
For the 1st year at a given rate, SI and CI are equal. For 2 years, the difference between CI and SI is P × (R ÷ 100)².

Q54. Answer: (c) 23

Shortcut Trick
The given number 726179 is an odd number, so it cannot be divided by even numbers like 28 and 20.
We only need to test divisibility for 29 and 23.
Using the divisibility rule for 23 (add 7 × last digit to the remaining number):
72617 + (9 × 7) = 72680 → 7268 + (0 × 7) = 7268 → 726 + (8 × 7) = 782
Further applying the rule: 78 + (2 × 7) = 92
Since 92 is completely divisible by 23 (23 × 4 = 92), the entire number is divisible by 23.
Therefore The correct answer is 23.
Alternate Method
Given:
Number = 726179
Options provided: 29, 28, 23, 20
Calculation:
=> Since 726179 ends in 9, it is an odd number. Hence, we can eliminate the even options 28 and 20 directly.
=> Let us test divisibility by 23 through standard long division.
=> 726 ÷ 23 = 31 with a remainder of 13
=> Bring down 1 to make 131. 131 ÷ 23 = 5 with a remainder of 16
=> Bring down 7 to make 167. 167 ÷ 23 = 7 with a remainder of 6
=> Bring down 9 to make 69. 69 ÷ 23 = 3 with a remainder of 0
=> Since the final remainder is 0, 726179 is exactly divisible by 23.
=> The quotient is 31573.
Therefore The correct answer is 23.
Additional Information
Divisibility Rule of 23
Add 7 times the unit digit to the remaining part of the number. If the result is divisible by 23, the original number is also divisible by 23.
Divisibility Rule of 29

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Add 3 times the unit digit to the remaining part of the number. If the result is divisible by 29, the original number is also divisible by 29.

Divisibility Rule of 19

Add 2 times the unit digit to the remaining part of the number. If the result is divisible by 19, the original number is also divisible by 19.

Divisibility Rule of 17

Subtract 5 times the unit digit from the remaining part of the number. If the result is divisible by 17, the original number is also divisible by 17.

Q55. Answer: (b) 6

Shortcut Trick

The third proportional of two numbers a and b is given directly by the formula $x = b^2 \div a$.

Here, a = 54 and b = 18.

$x = (18 \times 18) \div 54$

$x = 324 \div 54 = 6$

Therefore The correct answer is 6.

Alternate Method

Given:

First number (a) = 54

Second number (b) = 18

Formula Used:

If x is the third proportional to a and b, they form a continuous proportion such that a : b :: b : x

=> a ÷ b = b ÷ x

÷ 3

÷ 3

54

:

18

::

18

:

x

First (a)

Second (b)

Second (b)

Third (x)

x = 18 ÷ 3 = 6

Calculations:

=> 54 : 18 = 18 : x

=> 54 ÷ 18 = 18 ÷ x

=> 3 = 18 ÷ x

=> x = 18 ÷ 3

=> x = 6

Therefore The correct answer is 6.

Additional Information

Third Proportional

If a : b :: b : c, then c is called the third proportional to a and b. Formula: $c = b^2 \div a$.

Fourth Proportional

If a : b :: c : d, then d is the fourth proportional to a, b, and c. Formula: $d = (b \times c) \div a$.

Mean Proportional

The mean proportional between two quantities a and b establishes an equal ratio between them. Formula: $x = \sqrt{(a \times b)}$.

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Q56. Answer: (b) 20

Shortcut Trick

Total weight of all 3 persons = 46 × 3 = 138 kg.

Total weight of Vipul and Mohan = 36 × 2 = 72 kg.

Total weight of Mohan and Mohammad = 43 × 2 = 86 kg.

Weight of the overlapping person (Mohan) = (Sum of first two + Sum of last two) − Total weight of all three.

Weight of Mohan = (72 + 86) − 138 = 158 − 138 = 20 kg.

Therefore The correct answer is 20 kg.

Alternate Method

Given:

Average weight of Vipul, Mohan, and Mohammad = 46 kg

Average weight of Vipul and Mohan = 36 kg

Average weight of Mohan and Mohammad = 43 kg

Formula Used:

Total Value = Average × Number of Entities

Total Weight = 46 × 3 = 138 kg

Vipul

Mohan

Mohammad

V + M = 72 kg

M + Md = 86 kg

Mohan's Weight = (72 + 86) − 138 = 20 kg

Calculations:

=> Let the weights of Vipul, Mohan, and Mohammad be V, M, and Md respectively.

=> Total weight of all three (V + M + Md) = 46 × 3 = 138 kg

=> Total weight of Vipul and Mohan (V + M) = 36 × 2 = 72 kg

=> Total weight of Mohan and Mohammad (M + Md) = 43 × 2 = 86 kg

=> Adding both equations: (V + M) + (M + Md) = 72 + 86 = 158 kg

=> This simplifies to: V + 2M + Md = 158 kg

=> Subtracting the total weight from this equation yields Mohan's weight:

=> M = (V + 2M + Md) − (V + M + Md)

=> M = 158 − 138 = 20 kg

Therefore The correct answer is 20 kg.

Additional Information

Combined Average

When two sets with n1 and n2 elements have averages A1 and A2 respectively, their combined average is computed as (n1 × A1 + n2 × A2) ÷ (n1 + n2).

Weighted Average

Calculated when different sets of values contribute differently to the overall measure. The formula is (w1x1 + w2x2 + ...) ÷ (w1 + w2 + ...).

Net Deviation Method

The overall average can quickly be found by assigning an assumed average and calculating the net deviation of all values. True Average = Assumed Average + (Net Deviation ÷ Total Observations).

Q57. Answer: (c) 63%

Shortcut Trick

By the concept of weighted average, if the overall literacy rate of a population is x% and the literacy rate of one component (males) is also exactly x%, then the literacy rate of the remaining component (females) must also be exactly x%.

Since the overall literacy is 63% and male literacy is also 63%, the female literacy rate must equal the overall average.

Therefore, no calculations are required to find the percentage of literate females.

Therefore The correct answer is 63%.

Alternate Method

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Given:

Total population = 364000

Total number of males = 178000

Total literate population = 63%

Literate males = 63%

Total Population = 364,000

Literate = 63%

Males = 178,000

Literate = 63%

Females = 186,000

Literate = ?

Calculations:

=> Total females = Total population − Total males

=> Total females = 364000 − 178000 = 186000

=> Total literate persons = (63 ÷ 100) × 364000 = 229320

=> Total literate males = (63 ÷ 100) × 178000 = 112140

=> Total literate females = Total literates − Male literates

=> Total literate females = 229320 − 112140 = 117180

=> Percentage of literate females = (Total literate females ÷ Total females) × 100

=> Percentage of literate females = (117180 ÷ 186000) × 100 = 63%

Therefore The correct answer is 63%.

Additional Information

Weighted Average Property

If two distinct components A and B combine to form a whole, and both component A and the whole share the exact same average or percentage, then component B must also independently hold that same average or percentage.

Mixture and Alligation Principle

When two groups are merged, the ratio of their quantities is inversely proportional to the differences between their individual averages and the overall average. If a group's average equals the overall average, the difference is zero, forcing the other group's average to also equal the overall average.

Percentage Calculation Formula

The percentage of a specific subset relative to its base is always determined by the formula: (Subset Value ÷ Total Base Value) × 100.

Q58. Answer: (b) 1.75 km

Shortcut Trick

To find the length directly in kilometres, convert the given time into hours.

Time = 1.4 minutes = 1.4 ÷ 60 hours

Distance = Speed × Time

Distance = 75 × (1.4 ÷ 60) = (75 × 1.4) ÷ 60

Distance = 105 ÷ 60 = 1.75 km

Therefore The correct answer is 1.75 km.

Alternate Method

Given:

Speed of the car = 75 km/hr

Time taken to cross the bridge = 1.4 minutes

Formula Used:

Distance = Speed × Time

1 km/hr = 5/18 m/s

Time taken = 1.4 minutes

Speed = 75 km/hr

Length of bridge = ?

Calculations:

=> Speed of the car = 75 × (5/18) = 125/6 m/s

=> Time taken = 1.4 × 60 = 84 seconds

=> Length of the bridge = Distance covered by the car

=> Distance = Speed × Time

=> Distance = (125/6) × 84 = 125 × 14

=> Distance = 1750 m

=> Distance in km = 1750 ÷ 1000 = 1.75 km

Therefore The correct answer is 1.75 km.

Additional Information

Distance, Speed and Time Formula

Distance = Speed × Time. This is the fundamental relation used to calculate the length of the bridge covered by any vehicle.

Unit Conversion for Speed

To convert km/hr to m/s, multiply the speed value by 5/18. To convert back from m/s to km/hr, multiply by 18/5.

Average Speed Concept

When a journey is covered at varying speeds, Average Speed = Total Distance ÷ Total Time. For two equal distances covered at speeds A and B, Average Speed = (2 × A × B) ÷ (A + B).

Q59. Answer: (c) 24

Shortcut Trick

From the second condition, Mother's age M = 6D + 9.

Substitute directly into the first condition: 2(6D + 9) = 9D + 27

12D + 18 = 9D + 27 => 3D = 9 => Daughter's age D = 3 years.

Mother's age M = 6 × 3 + 9 = 27 years.

Difference in their ages = 27 − 3 = 24 years.

Therefore The correct answer is 24 years.

Alternate Method

Given:

2 × Mother's age = 9 × Daughter's age + 27

6 × Daughter's age = Mother's age − 9

Mother

27 years

Daughter

3

Difference = 24 years

Calculations:

Let Mother's present age be M and Daughter's present age be D.

=> 2M = 9D + 27 --- (Equation 1)

=> 6D = M − 9

=> M = 6D + 9 --- (Equation 2)

Substitute Equation 2 into Equation 1:

=> 2 × (6D + 9) = 9D + 27

=> 12D + 18 = 9D + 27

=> 12D − 9D = 27 − 18

=> 3D = 9

=> D = 3

Substitute D = 3 into Equation 2:

=> M = 6 × 3 + 9

=> M = 18 + 9 = 27

=> Difference between ages = M − D

=> Difference = 27 − 3 = 24 years

Therefore The correct answer is 24 years.

Additional Information

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Problems on Ages

Generally, age problems are solved by assuming the present age of the unknowns as variables like x and y. All past and future ages must be formulated relative to these present ages.

Linear Equations Substitution Method

A system of equations can be effectively solved by isolating one variable from the first equation and directly substituting its expression into the second equation to eliminate unknowns.

Q60. Answer: (c) Rs. 45

Shortcut Trick

Year 2024 is a leap year, so total days from 23 Feb to 24 Apr = 6 (Feb) + 31 (Mar) + 24 (Apr) = 61 days.

Time (T) in years = 61 ÷ 366 = 1/6 year.

Direct formula: SI = P × R × T ÷ 100

SI = 4000 × 6.75 × (1/6) ÷ 100 = 40 × 1.125 = 45.

Therefore The correct answer is Rs. 45.

Alternate Method

Given:

Principal (P) = Rs. 4,000

Rate (R) = 6.75% per annum

Date of deposit = 23 February 2024

Date of withdrawal = 24 April 2024

Formula Used:

Simple Interest (SI) = (P × R × T) ÷ 100

23 Feb 2024

24 Apr 2024

Time (T) = 61 Days

P = Rs. 4000

R = 6.75%

SI = Rs. 45

Calculations:

=> Year 2024 is divisible by 4, hence it is a leap year and February has 29 days.

=> Number of days in February (excluding deposit date) = 29 − 23 = 6 days

=> Number of days in March = 31 days

=> Number of days in April = 24 days

=> Total time (T) in days = 6 + 31 + 24 = 61 days

=> Since it is a leap year, total days in the year = 366 days

=> Time (T) in years = 61 ÷ 366 = 1/6 year

=> SI = (4000 × 6.75 × (1/6)) ÷ 100

=> SI = 40 × 6.75 × (1/6)

=> SI = 270 ÷ 6

=> SI = 45

Therefore The correct answer is Rs. 45.

Additional Information

Simple Interest (SI)

It is calculated only on the original principal amount. The formula is SI = (P × R × T) ÷ 100.

Calculation of Days

Usually, the day of deposit is excluded and the day of withdrawal is included while calculating the total time period in days.

Leap Year Rule

A year is a leap year if it is exactly divisible by 4 (and by 400 if it is a century year). February has 29 days, making the total year 366 days.

Q61. Answer: (d) Rs. 6,272

Shortcut Trick

Multiplying factor for a 30% discount = (100 − 30)% = 0.70

Multiplying factor for a 12% tax = (100 + 12)% = 1.12

Final Price = Marked Price × 0.70 × 1.12

=> Final Price = 8000 × 0.70 × 1.12 = 5600 × 1.12 = Rs. 6272

Therefore The correct answer is Rs. 6272.

Alternate Method

Given:

Marked Price (MP) of jacket = Rs. 8,000

Discount offered = 30%

Sales Tax added = 12%

Formula Used:

Discounted Price = MP × (100 − Discount%) ÷ 100

Final Price = Discounted Price × (100 + Tax%) ÷ 100

Rs. 8000

Marked Price

Rs. 5600

After Discount

Rs. 6272

Final Price

− 30%

Discount

• 12%

Tax Added

Final Price = 8000 × (70/100) × (112/100) = Rs. 6272

Calculations:

=> Discounted Price = 8000 × (100 − 30) ÷ 100

=> Discounted Price = 8000 × 70 ÷ 100 = Rs. 5600

=> Final Price = Discounted Price × (100 + 12) ÷ 100

=> Final Price = 5600 × 112 ÷ 100

=> Final Price = 56 × 112 = Rs. 6272

Therefore The correct answer is Rs. 6272.

Additional Information

Successive Percentage Changes

When multiple percentage changes occur on a single item, the final value can be calculated directly by multiplying the initial value by the respective multiplying factors: Final = Initial × (1 ± R1/100) × (1 ± R2/100).

Discount vs Tax

A discount is always subtracted from the Marked Price, reducing the cost. Conversely, tax is always calculated on the discounted price and added to it, increasing the final amount paid by the customer.

Effective Percentage Formula

For two successive changes A% and B%, the net percentage change is given by: Net Change = A + B + (A × B)/100. For a 30% decrease and 12% increase, the net change = −30 + 12 + (−30 × 12)/100 = −18 − 3.6 = −21.6%.

Q62. Answer: (a) sec A cosec A

Shortcut Trick

Use the value putting method by assuming A = 30° (avoid 45° as it makes the denominator zero).

Expression = (sin 30° − 2sin³30°) ÷ (2cos³30° − cos 30°) + √(cosec²30° − 1)

=> (1/2 − 2×(1/8)) ÷ (2×(3√3/8) − √3/2) + √(4 − 1)

=> (1/4) ÷ (√3/4) + √3 = 1/√3 + √3 = 4/√3

Checking Option 1: sec 30° × cosec 30° = (2/√3) × 2 = 4/√3 (Matches perfectly).

Therefore The correct answer is sec A cosec A.

Alternate Method

Given:

(sin A − 2sin³A) / (2cos³A − cos A) + √(cosec²A − 1)

Formula Used:
cos 2A = 1 − 2sin²A = 2cos²A − 1
cosec²A − 1 = cot²A
Calculation:
=> [sin A × (1 − 2sin²A)] / [cos A × (2cos²A − 1)] + √(cot²A)
=> [sin A × cos 2A] / [cos A × cos 2A] + cot A
=> (sin A / cos A) + cot A
=> tan A + cot A
=> (sin A / cos A) + (cos A / sin A)
=> (sin²A + cos²A) / (sin A × cos A)
=> 1 / (sin A × cos A)
=> (1 / cos A) × (1 / sin A)
=> sec A × cosec A
Therefore The correct answer is sec A cosec A.
Additional Information
Pythagorean Identities
sin²θ + cos²θ = 1, 1 + tan²θ = sec²θ, and 1 + cot²θ = cosec²θ.
Double Angle Formulas
cos 2θ = cos²θ − sin²θ = 2cos²θ − 1 = 1 − 2sin²θ.
Reciprocal Identities
tan θ = sin θ / cos θ and cot θ = cos θ / sin θ. Also, sec θ = 1 / cos θ and cosec θ = 1 / sin θ.

Q63. Answer: (d) 3844

Shortcut Trick
Side of the square = Perimeter ÷ 4 = 248 ÷ 4 = 62 m.
Area = Side² = 62 × 62 = 3844 m².
Therefore The correct answer is 3844 m².
Alternate Method
Given:
Perimeter of the square = 248 m
Formula Used:
Perimeter = 4 × a (where a is the side length)
Area = a²
a = 62 m
a = 62 m
P = 248 m
Area = ?
Calculations:
=> 4 × a = 248
=> a = 248 ÷ 4
=> a = 62 m
=> Area = a²
=> Area = 62 × 62
=> Area = 3844 m²
Therefore The correct answer is 3844 m².
Additional Information
Rectangle
Perimeter = 2 × (l + b) | Area = l × b | Diagonal = √(l² + b²)
Diagonal of a Square
Diagonal (d) = a√2 | Area can also be calculated directly as (d²) ÷ 2.
Rhombus
Perimeter = 4 × a | Area = (d1 × d2) ÷ 2, where d1 and d2 are the length of the diagonals.

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Circle

Circumference = 2πr | Area = πr²

Q64. Answer: (a) Rs. 420

Shortcut Trick

When investment time is the same for all partners, profit is directly proportional to the invested capital.

Total Investment = 1020 + 1440 + 1230 = 3690

Rahul's fractional share of the total capital = 1230 ÷ 3690 = 1/3

Rahul's Profit = 1/3 × Total Profit = 1/3 × 1260 = 420

Therefore The correct answer is Rs. 420.

Alternate Method

Given:

Investment by Manoj = Rs. 1,020

Investment by Swati = Rs. 1,440

Investment by Rahul = Rs. 1,230

Total Profit at the end of the year = Rs. 1,260

Formula Used:

Profit Ratio = Capital1 × Time1 : Capital2 × Time2 : Capital3 × Time3

Total Investment = Rs. 3690

Manoj

Rs. 1020

Swati

Rs. 1440

Rahul

Rs. 1230

Total Profit = Rs. 1260

Calculations:

=> Since the time period is 1 year for all, their profit ratio is equal to their investment ratio.

=> Profit Ratio (Manoj : Swati : Rahul) = 1020 : 1440 : 1230

=> Dividing by 30 => Simplified Ratio = 34 : 48 : 41

=> Sum of the ratio parts = 34 + 48 + 41 = 123 parts

=> Value of total 123 parts = Rs. 1,260

=> Rahul's Profit Share = (41 ÷ 123) × 1260

=> Rahul's Profit Share = (1 ÷ 3) × 1260 = 420

Therefore The correct answer is Rs. 420.

Additional Information

Simple Partnership

When all partners invest their capitals for the exact same duration, the profits or losses are distributed precisely in the ratio of their original investments.

Compound Partnership

When partners invest for varying time periods, the profit sharing ratio is calculated as the product of their capital and time invested: Ratio = (C1 × T1) : (C2 × T2).

Working vs Sleeping Partner

A working partner receives a fixed salary or percentage of the profit for managing the business. The remaining profit is then shared among all partners based on their respective investments.

Q65. Answer: (a) 51.4

Shortcut Trick

Let the assumed average be 50 kg.

Deviations of each weight from 50 kg: −10, −1, +6, +23, −11

Net sum of deviations = (−10 − 1 + 6 + 23 − 11) = +7

Average deviation = +7 ÷ 5 = +1.4 kg

Actual average = Assumed average + Average deviation = 50 + 1.4 = 51.4 kg

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Therefore The correct answer is 51.4 kg.

Alternate Method

Given:

Weights of the 5 family members are 40 kg, 49 kg, 56 kg, 73 kg, and 39 kg.

Formula Used:

Average = Sum of all observations ÷ Total number of observations

4049567339Average = 51.4Weights of 5 Family Members (kg)

Calculations:

=> Total weight of the family = 40 + 49 + 56 + 73 + 39

=> Total weight = 257 kg

=> Total number of members = 5

=> Average weight = 257 ÷ 5

=> Average weight = 51.4 kg

Therefore The correct answer is 51.4 kg.

Additional Information

Weighted Average

When different sets have different number of items, their combined average is calculated as: A_w = (n1A1 + n2A2) ÷ (n1 + n2).

Change in Average

If a constant 'k' is added, subtracted, multiplied or divided to each observation, the new average also undergoes the exact same operation by 'k'.

Finding an Included Item

Value of the newly added item = Old Average + (New Average − Old Average) × New Total Number of Items.

Q66. Answer: (a) 1350

Shortcut Trick

An increase of 100% means the original value is doubled (i.e., it becomes 200%).

=> Original Number × 2 = 2700

=> Original Number = 2700 ÷ 2

=> Original Number = 1350

Therefore The correct answer is 1350.

Alternate Method

Given:

Total value after increase = 2700

Percentage increase = 100%

Original (100%)

• 100% Increase

Total (200%) = 2700

Value is doubled

Calculations:

Let the original number be N.

=> N + 100% of N = 2700

=> N + N = 2700

=> 2N = 2700

=> N = 2700 ÷ 2

=> N = 1350

Therefore The correct answer is 1350.

Additional Information

Percentage Change

Percentage change is calculated as: ((Final Value − Initial Value) ÷ Initial Value) × 100.

Multiplying Factor Method

An increase of r% multiplies the base value by (1 + r/100). A decrease of r% multiplies it by (1 − r/100).

Successive Percentage

When a number undergoes successive percentage changes of a% and b%, the net percentage change is given by: (a + b + (a × b) ÷ 100)%.

Q67. Answer: (a) 90% loss

Shortcut Trick

Given, 50 × SP = 5 × CP

=> SP / CP = 5 / 50 = 1 / 10

Here, CP = 10 parts and SP = 1 part.

=> Loss = 10 − 1 = 9 parts.

=> Loss % = (9 / 10) × 100% = 90%

Therefore The correct answer is 90% loss.

Alternate Method

Given:

Selling price of 50 books = Cost price of 5 books

Formula Used:

Loss = Cost Price (CP) − Selling Price (SP)

Loss % = (Loss / CP) × 100

Cost Price (CP) = 10 units

SP = 1

Loss = 9 units (90%)

Calculations:

Let the CP of 1 book be Rs. 1.

=> Total CP of 50 books = Rs. 50

From the given condition, SP of 50 books = CP of 5 books

=> SP of 50 books = 5 × Rs. 1 = Rs. 5

Now, for the transaction of 50 books:

=> Total CP = Rs. 50

=> Total SP = Rs. 5

Since CP is greater than SP, there is a clear loss.

=> Loss = 50 − 5 = Rs. 45

=> Loss % = (45 / 50) × 100

=> Loss % = 45 × 2 = 90%

Therefore The correct answer is 90% loss.

Additional Information

Article Equivalent Profit & Loss

When the CP of 'a' articles equals the SP of 'b' articles, Profit/Loss % = ((a − b) / b) × 100. A positive result indicates profit, while a negative result indicates a loss.

Marked Price & Discount

Discount is always calculated on the Marked Price (MP). SP = MP − Discount. The Discount % = (Discount / MP) × 100.

Dishonest Dealer

When a dealer pretends to sell goods at CP but uses false weight, Profit % = (Error / (True Weight − Error)) × 100.

Q68. Answer: (b) 19

Shortcut Trick

The given number is 159916901, which is an odd number.

An odd number can never be perfectly divided by even numbers, so options 18 and 28 are eliminated.

Its last two digits are 01, which means it is not divisible by 25 (as 25 requires the last two digits to be 00, 25, 50, or 75).

Thus, by the simple process of elimination, the number must be divisible by 19.

Therefore The correct answer is 19.

Alternate Method

Given:

The number to be divided = 159916901

Checking the given options:

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=> Option 1: 25

=> Since the last two digits of 159916901 are 01, it is not divisible by 25.

=> Option 3: 28

=> 28 is an even number, and 159916901 is an odd number. Hence, it is not divisible by 28.

=> Option 4: 18

=> 18 is an even number, so it cannot perfectly divide an odd number.

=> Option 2: 19

=> Dividing directly: 159916901 ÷ 19

=> 159916901 = 19 × 8416679

=> The remainder is 0, indicating perfect divisibility.

Therefore The correct answer is 19.

Additional Information

Divisibility Rule of 19

Multiply the last digit of the number by 2 and add it to the remaining truncated number. If the resulting sum is divisible by 19, then the original number is also divisible by 19.

Divisibility Rule of 25

A number is completely divisible by 25 only if its last two digits are exactly 00, 25, 50, or 75.

Divisibility Rule of Even Numbers

An even number will always have an even unit digit (0, 2, 4, 6, 8). Moreover, an even number can never perfectly divide any odd number as 2 will never be a prime factor of the odd number.

Q69. Answer: (a) Rs. 1,50,000

Shortcut Trick

Profit of M = (Total Profit + Difference) ÷ 2 = (4896 + 288) ÷ 2 = Rs. 2592

Profit of N = (Total Profit − Difference) ÷ 2 = (4896 − 288) ÷ 2 = Rs. 2304

Profit ratio (M : N) = 2592 : 2304 = 9 : 8

Ratio of Capitals = (Profit_M ÷ Time_M) : (Profit_N ÷ Time_N) = (9 ÷ 3) : (8 ÷ 5) = 3 : 1.6 = 15 : 8

Difference in capital ratio = 15 − 8 = 7 units => 7 units = Rs. 70,000 => 1 unit = Rs. 10,000

M's capital = 15 units × 10,000 = Rs. 1,50,000

Therefore The correct answer is Rs. 1,50,000.

Alternate Method

Given:

Difference in Capital (M − N) = Rs. 70,000

Time for M (T_M) = 3 months

Time for N (T_N) = 5 months

Total Profit = Rs. 4896

Difference in Profit (M − N) = Rs. 288

Formula Used:

Profit Ratio = (Capital of M × Time of M) : (Capital of N × Time of N)

Capital Ratio

Time

Profit Ratio

M

15 units

×

3m

=

9 units (Rs. 2592)

N

8 units

×

5m

=

8 units (Rs. 2304)

Diff: 15 − 8 = 7 units

7 units = Rs. 70,000

Profit Diff: Rs. 288

Total: Rs. 4896

Calculations:

=> M's Profit = (Total Profit + Difference) ÷ 2

=> M's Profit = (4896 + 288) ÷ 2 = Rs. 2592

=> N's Profit = Total Profit − M's Profit = 4896 − 2592 = Rs. 2304

=> Profit Ratio (M : N) = 2592 : 2304 = 9 : 8

=> Capital Ratio (C_M : C_N) = (Profit_M ÷ T_M) : (Profit_N ÷ T_N)

=> C_M : C_N = (9 ÷ 3) : (8 ÷ 5) = 3 : (8 ÷ 5) = 15 : 8

=> Let M's Capital be 15x and N's Capital be 8x.

=> Difference in Capital = 15x − 8x = 7x

=> Given that 7x = Rs. 70,000 => x = Rs. 10,000

=> M's Capital = 15x = 15 × 10,000 = Rs. 1,50,000

Therefore The correct answer is Rs. 1,50,000.

Additional Information

Profit Distribution in Partnership

Profit ratio is directly proportional to the product of Capital and Time. Formula: P1 : P2 = (C1 × T1) : (C2 × T2).

Sum and Difference Rule

When the sum (S) and difference (D) of two quantities are given, the larger quantity = (S + D) ÷ 2, and the smaller quantity = (S − D) ÷ 2.

Sleeping vs Working Partner

A working partner receives a fixed salary or commission for managing the business before the remaining profit is divided among all partners according to their respective investment ratios.

Q70. Answer: (d) $33 \times 8^3 \times 142 \times 19^2$

Shortcut Trick

To find the LCM of numbers given in exponential form, simply take the product of the highest power of each distinct base present.

The distinct bases present in the given numbers are 3, 8, 14, and 19.

The highest powers for each are 3^3, 8^3, 14^2, and 19^2.

Multiply them together to obtain the LCM.

Therefore The correct answer is $3^3 \times 8^3 \times 14^2 \times 19^2$.

Alternate Method

Given:

First number = $3^3 \times 8^2 \times 14$

Second number = $3^2 \times 14^2 \times 19$

Third number = $8^3 \times 14^2 \times 19^2$

Formula Used:

The Least Common Multiple (LCM) of numbers expressed in exponential form is the product of the highest power of all bases involved.

Calculations:

=> The distinct bases in all three expressions are 3, 8, 14, and 19.

=> Comparing the powers of base 3: max(3, 2, 0) = 3

=> Comparing the powers of base 8: max(2, 0, 3) = 3

=> Comparing the powers of base 14: max(1, 2, 2) = 2

=> Comparing the powers of base 19: max(0, 1, 2) = 2

=> LCM = Product of the highest powers of all distinct bases

=> LCM = $3^3 \times 8^3 \times 14^2 \times 19^2$

Therefore The correct answer is $3^3 \times 8^3 \times 14^2 \times 19^2$.

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Additional Information

HCF of Exponential Numbers

The Highest Common Factor (HCF) is found by taking the product of the lowest power of each common base present in all the given expressions.

LCM and HCF of Fractions

LCM of fractions = LCM of numerators ÷ HCF of denominators.

HCF of fractions = HCF of numerators ÷ LCM of denominators.

Product Rule

For any two numbers, the product of the numbers = LCM × HCF.

Q71. Answer: (a) UQ-VR

The logic followed here is:

Option 1) UQ-VR

Option 2) QM-RO

Option 3) SO-TQ

Option 4) WS-XU

Here, 'UQ-VR' is odd among the given options.

Hence, the correct answer is "Option 1".

Q72. Answer: (d) Only conclusion (II) follows.

Given Statements:

Some marks are tattoo.

No tattoo is a painting.

The least possible Venn diagram for the given statement is:

Conclusions:

I.Some marks are painting.

The diagram shows that the part of 'Marks' that is 'Tattoo' cannot be 'Painting'.

However, the remaining part of the 'Marks' circle.

Since this conclusion is not definitely true.

I. Some tattoo are mark.

This is the simple conversion of the first statement: "Some marks are tattoo."

Therefore, this conclusion logically follows.

Only conclusion (II) is a definite logical consequence of the statements.

Hence, the correct answer is "Option 4".

Q73. Answer: (b) 5

The logic followed here is:

‘DRUM’ is coded as ‘2194’

‘CURD’ is coded as ‘4592’

So, '5' is the code for ‘C’ in the given code language.

Hence, the correct answer is "Option 2".

Q74. Answer: (c) 196

The logic followed here is:

thus, "196" will replace the question mark in the given series.

Hence, the correct option is "Option 3".

Q75. Answer: (a) 20

The logic followed here is:

Mukul is 5th from the right end.

Alok is 10th from the right end.

Alok is exactly between Mukul and Rohan.

Rohan is 6th from the left end

Now,

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The difference in position between M and A is 10 - 5 = 5
Since A is exactly in the middle, the difference in position between A and R must also be 5.
So, Rohan's position from the Right: = R- A + 5 = 10 + 5 =15
Total people = Position from left + Position from right - 1
=> 6 + 15 - 1 = 21 - 1 = 20
Hence, the correct answer is "Option 1".

Q76. Answer: (c) 100

The logic followed here is:
thus, "100" will replace the question mark in the given series.
Hence, the correct option is "Option 3".

Q77. Answer: (d) 3

The logic followed here is:
'TALK' is coded as '5327'
'LINE' is coded as '6143'
So, '3' is the code for 'L' in the given code language.
Hence, the correct answer is "Option 4".

Q78. Answer: (b) 84

BODMAS Table:
Given equation: (63 P 2) R (24 P 3) S (98 Q 2) R (48 Q 3) R 3 = ?
Now, if sign are interchanged, then:
(63 x 2) - (24 x 3) + (98 ÷ 2) - (48 ÷ 3) - 3 = ?
=> (126) - (72) + (49) - (16) - 3 = 84
Hence, the correct answer is "Option 2".

Q79. Answer: (c) MILE - IELM - ELIM

Now,
SAIN - ANIS - NIAS
COIN - ONIC - NIOC
Let's check each Option One by One.
Option 1) YOUR - YUOR - RUOY

Y	O	U	R
1	2	3	4
Y	U	O	R
1	3	2	4
R	U	O	Y
4	3	2	1

Option 2) MACE - AMCE - EACM

M	A	C	E
1	2	3	4
A	M	C	E
2	1	3	4
E	A	C	M
4	2	3	1

Option 3) MILE - IELM - ELIM

M	I	L	E

1	2	3	4
I	E	L	M
2	4	3	1
E	L	I	M
2	3	1	4

Option 4) FEAT - EFAT - TEAF

F	E	A	T
1	2	3	4
E	F	A	T
2	1	3	4
T	E	A	F
4	2	3	1

So, Only MILE - IELM - ELIM follows the pattern of given letter cluster.

Hence, the correct answer is 'Option 3'.

Q80. Answer: (d) Three

Given: (Left) 9 8 6 1 & & 2 ^ ^ $ $ > 5 ^ 6 ^ 4 & # 6 @ (Right)

Now,

Symbols which is immediately preceded by a number and also immediately followed by another symbol

So, Needed pattern is: Number - Symbol - Symbol.

There are 3 Symbols which are preceded by a number and also immediately followed by a number.

Hence, the correct answer is 'Option 4'.

Q81. Answer: (b) 4

Given numbers: 6854376,

1 is added to each odd digit and 4 is subtracted from each even digit in the number

Newly formed arranged in sequence:

2460482

The third digit from the right is 4.

Hence, the correct answer is 'Option 2'.

Q82. Answer: (c) 9 km to the west

Given:

B starts from Point A and drives 16 km towards the south.

He then takes a right turn and drives 12 km, then turns right and drives 19 km.

He then takes a right turn and drives 21 km.

He takes a final right turn, drives 3 km and stops at Point P.

Current Position (P): 9 km East of A and 0 km North/South of A.

Shortest Distance: The distance between (9, 0) and (0, 0) is 9 - 0 = 9 km.

Direction: To move from P (9, 0) to A (0, 0), B must move 9 km in the negative X direction, which is West.

So, B must drive 9 km to the West to reach Point A.

Hence, the correct answer is "Option 3".

Q83. Answer: (c) ARHV

The logic followed here is:

For, 'BSWK is related to GXTH'

For, 'LCQE is related to QHNB'

Similarly, for 'VMKY'

So, 'VMKY' will be related to 'ARHV'

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Hence, the correct answer is "Option 3".

Q84. Answer: (b) 5^(th)

The logic followed here is:
Total Students = 49
Amir's Rank from Right = 22nd
Amir's Rank from Left = 28th
So, Tarun's position from the left end of the line
Total Students = 49
Amir's Rank from Right = 22nd
Amir's Rank from Left = 28th
Tarun is to the Left by 23 positions
Tarun's Final Rank from Left = 28 - 23 = 5th
Hence, the correct answer is "Option 2".

Q85. Answer: (a) Either conclusion (I) or (II) follows.

Statements:
All sharks are salmons.
Some salmons are tunas.
Conclusions:
I. Some sharks are tunas. - False(because there is no direct relation is given between shark and tuna, so it can be possible only).
II. No tunas are sharks. - False(because there is no direct relation is given between shark and tuna, so it can be possible only)
So, the conclusion is Either conclusion (I) or (II) follows.
Hence, the correct answer is "Option 1".
Note:
Complementary pair
1) When both the elements of conclusions are the same.
2) When both the conclusions are false individually.
There are only two different types of complementary pairs, which satisfy the condition of either or.
1) All - Some not
2) No - Some
Here, some + no forms a complementary pair.

Q86. Answer: (c) 2

Given: Seven boxes A, B, C, D, E, F and G are kept one over the other but not necessarily in the same order.
1) Only B is kept above C.
2) Only two boxes are kept between C and A.
3) Only E is kept below F.
4) G is not kept immediately above A.

B
C
G
A
F
E

So, D will be in the remaining place.

B
C

G
D
A
F
E

So, there are 'Two' boxes are kept below A.

Hence, the correct answer is "Option 3".

Q87. Answer: (b) 289

BODMAS Table:

Given equation: 49 − 1 × 480 + 40 ÷ 6 = ?

Now, if '+' and '-' and '×' and '÷' are interchanged, then: 49 ÷ 1 + 480 - 40 × 6 = ?

=> 49 ÷ 1 + 480 - 240 = ?

=> 529 - 240 = 289

Hence, the correct answer is "Option 2".

Q88. Answer: (a) Mother's mother

Family Chart:

Decoding the Symbols:

Symbol	**=**	**$**	**@**	•
Meaning	Mother	Brother	Wife	Father

Given: W = A $ C @ D * R

It means: W is the Mother of A, A is the Brother of C, C is the Wife of D, D is the Father of R.

So, W is the Mother's mother of R.

Hence, the correct answer is "Option 1".

Q89. Answer: (a) JMF71

The logic followed here is:

So, 'JMF 71' will replace the question mark in the given series.

Hence, the correct answer is "Option 1".

Q90. Answer: (a) Three

Given: Seven people, I, J, K, L, M, N and O, are sitting in a row, facing north.

1) No one sits to the right of K.

2) Only three people sit between K and J.

3) Only two people sit between J and I.

4) L sits third to the left of O.

5) M sits to the immediate right of O.

And, N will sit at the remaining place.

So, There are 3 people sit between N and I.

Hence, the correct answer is "Option 1".

Q91. Answer: (c) MSF

The logic followed here is:

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

Hence, the correct answer is "Option 3".

Q92. Answer: (a) 30 km towards north

Given:

Sukesh starts from Point Y and drives 25 km towards south.

He then takes a left turn, drives 7 km

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He then turns right and drives 5 km
He takes a final right turn, drives 7 km and stops at Point Z.
So, He should drive 30 km towards north direction should he drive in order to reach Point Y again.
Hence, the correct answer is "Option 1".

Q93. Answer: (d) NQIM

The logic followed here is:
For, 'ORJN is related to ILDH'
For, 'MPHL is related to GJBF'
Similarly, for 'TWOS'
So, 'TWOS' will be related to 'NQIM'
Hence, the correct answer is "Option 4".

Q94. Answer: (d) Two

Given: A, B, C, D, E, F and G are sitting around a circular table facing the centre.
1) B sits second to the right of A.
2) G sits second to the right of B.
3) C is the immediate neighbour of E and G.
4) D sits second to the right of E.
So, F will sit on the remaining place.
Here, There are people sit between F and E when counted from the left of E
Hence, the correct answer is "Option 4".

Q95. Answer: (d) 21

Given numbers: 85624179
1 is added to each even digit of the number, we get
Newly formed arranged in sequence: 95735179
We count the frequency of each unique digit in 95735179:
Digit 1: 1 time
Digit 3: 1 time
Digit 5: 2 times
Digit 7: 2 times
Digit 9: 2 times
The digits that are repeated more than once are 5, 7, and 9.
Sum = 5 + 7 + 9 = 21
Hence, the correct answer is 'Option 4'

Q96. Answer: (b) 1036

The logic followed here is:
thus, "1036" will replace the question mark in the given series.
Hence, the correct option is "Option 2".

Q97. Answer: (b) 9

Given: (Left) 716 893 279 546 182 (Right)
Now,
The numbers are rearranged in descending order:
(Left) 893 716 546 279 182 (Right)
The forth number is 279.
So, 9 is the third digit of the fourth number from the left extreme end.
Hence, the correct answer is 'Option 2'.

Q98. Answer: (a) KO-ON

The logic followed here is:
Option 1) KO-ON

Option 2) CG-FG
Option 3) AE-DE
Option 4) SW-VW
Here, 'KO-ON' is odd among the given options.
Hence, the correct answer is "Option 1".

Q99. Answer: (d) 11, 132

The logic followed here is:
Logic: (1st number × 12) = 2nd number.
9, 108
=> (9 × 12) = 108
16, 192
=> (16 × 12) = 192
Now, checking the options:
Option 1) 14, 154
=> (14 × 12) ≠ 154
Option 2) 6, 66
=> (6 × 12) ≠ 66
Option 3) 12, 162
=> (12 × 12) ≠ 162
Option 4) 11, 132
=> (11 × 12) = 132
Hence, the correct option is "Option 4"

Q100. Answer: (c) DKE

The logic followed here is:
Option 1) FMH
Option 2) KRM
Option 3) DKE
Option 4) HOJ
Here, 'DKE' is odd among the given options.
Hence, the correct answer is "Option 3".

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