RRB NTPC (UG) CBT-I Official Paper (Held On: 01 Sept, 2025 Shift 1) (Previous Year Paper)

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

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GENERAL AWARENESS

Q1. After his election as the first American pope, what papal name did Cardinal Robert Prevost choose?

(a) Pope Leo XIV
(b) Pope John XXIV
(c) Pope Benedict XVII
(d) Pope Francis II

Q2. Which of the following is the correct terminology for the gap between two neurons where they communicate?

(a) Node gap
(b) Synaptic cleft
(c) Dendritic cleft
(d) Axonal gap

Q3. Which farming type involves small landholdings, simple tools, and production mainly consumed by farmers and their families in India?

(a) Plantation farming
(b) Commercial farming
(c) Commercial grain farming
(d) Subsistence farming

Q4. Which type of natural vegetation in India is known for forests with hardwood trees such as sal, teak, and bamboo?

(a) Tropical deciduous forests
(b) Thorn forests
(c) Tropical evergreen forests
(d) Montane forests

Q5. Which memory is non-volatile, meaning it retains data even after the computer is turned off?

(a) Virtual Memory
(b) Cache Memory
(c) ROM
(d) RAM

Q6. During which of the following seasons was the National Agricultural Insurance Scheme launched to protect the farmers against crop losses suffered on account of natural calamities such as droughts, floods, hailstorms, cyclones, pests and diseases?

(a) Rabi 1999-2000
(b) Kharif 2001-2002
(c) Rabi 2005-2006
(d) Kharif 1998-1999

Q7. The 'Keel Laying' ceremony of the first of the five Fleet Support Ships (FSS) for the Indian Navy was held at which place in November 2024?

(a) Mazagon Dock Shipbuilders Ltd., Cochin
(b) Hindustan Shipyard Ltd., Visakhapatnam
(c) Goa Shipyard Limited
(d) ABG Shipyard Ltd., Mumbai

Q8. Who introduced the Permanent Settlement in British India?

(a) Lord Dalhousie
(b) Lord Wellesley
(c) Thomas Munro
(d) Lord Cornwallis

Q9. _____ is a classical dance form characterised by elaborate facial makeup, colourful costumes, and themes from Hindu epics, mainly performed by male dancers.

(a) Kathak
(b) Kathakali
(c) Bharatanatyam
(d) Mohiniyattam

Q10. Which company signed a Rs. 1,220 crore deal for Software Defined Radios with Defence Ministry in February 2025?

(a) Bharat Electronics Limited
(b) Reliance Naval Systems
(c) Hindustan Shipyard
(d) L&T

Q11. Which archaeological site shows pit dwellings and evidence of domesticated dogs during the Neolithic period?

(a) Chirand
(b) Burzahom
(c) Koldihwa
(d) Hallur

Q12. In January 2025, the Gujarat government declared the 'Inland Mangrove of Guneri', located in which district, as its first Biodiversity Heritage Site (BHS)?

(a) Morbi
(b) Kutch
(c) Vadodara
(d) Rajkot

Q13. Infrastructure has been a key pillar for sustained growth. Which initiative was launched in 2020 to coordinate infrastructure projects in India?

(a) Digital India
(b) Make in India
(c) PM Gati Shakti
(d) Bharatmala Pariyojana

Q14. During the Revolt of 1857, Rani Laxmibai led the rebellion from:

(a) Faizabad
(b) Kanpur
(c) Awadh
(d) Jhansi

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Q15. Who among the following decides the allocation of portfolios among Indian state ministers?

(a) Prime Minister
(b) Governor
(c) Chief Minister
(d) Chief Justice of the High Court

Q16. As per April 2025 announcement, CRPF decided to raise which battalion for counter terror operation in Jammu and Kashmir?

(a) Garud Commando Force
(b) Special Frontier Force (SFF)
(c) Para (Special Forces)
(d) CoBRA Battalion

Q17. Which of the following cases CANNOT be taken up by a Lok Adalat?

(a) Non-compoundable criminal offences
(b) Land acquisition cases
(c) Motor accident claims
(d) Divorce disputes under mutual consent

Q18. In which of the following years did Edward, Prince of Wales visit India on behalf of his father King George V, to thank the nation for the essential role it had played during the First World War?

(a) 1921
(b) 1920
(c) 1922
(d) 1925

Q19. Which of the following countries withdrew from the OCED Global Tax Deal in January 2025?

(a) Russia
(b) India
(c) USA
(d) China

Q20. DIGIPIN, an open-source nationwide geo-coded addressing system, is an alphanumeric code of how many characters based on latitude and longitude coordinates?

(a) 6 characters
(b) 8 characters
(c) 12 characters
(d) 10 characters

Q21. As announced in January 2025, which Indian pharmaceutical company is set to manufacture Paracetamol domestically?

(a) Ajanta Pharmaceuticals
(b) Satya Deeptha Pharmaceuticals
(c) Alkem Laboratories
(d) Lupin

Q22. Which of the following exercises was jointly conducted by the Indian Army and NDRF on May 2025 as a large-scale humanitarian assistance and disaster relief (HADR) simulation?

(a) Prakampana
(b) Raahat
(c) Shakti
(d) Mitra Shakti

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Q23. The International Date Line approximately follows which meridian?

(a) 90°E
(b) 180°
(c) 75° W
(d) 0°

Q24. Which example best reflects the need for the Constitution in daily life?

(a) Celebrating national festivals
(b) Resolving a family dispute
(c) Buying groceries from a local store
(d) Class deciding rules for representation and resource sharing

Q25. Which of the following players broke National Record in Women's 3000 m steeplechase at Doha Diamond League 2025 and qualified for the World Athletics Championships?

(a) Parul Chaudhary
(b) Chaitali Borekar
(c) Garima Yadav
(d) Ekta Pradeep Dey

Q26. A primary goal of LPG reforms was macroeconomic stabilisation. Which indicator improved significantly post-1991 reforms?

(a) Revenue deficit
(b) Foreign exchange reserves
(c) Fiscal deficit
(d) Rural unemployment

Q27. What is a key obligation of citizens toward fellow citizens and society?

(a) Serve in the military automatically and responsibly
(b) Participate morally and socially, not just legally
(c) Pay higher taxes than others
(d) Maintain political silence responsibly

Q28. Seasonal unemployment is common in rural economies. Which sector in India experiences the most seasonal unemployment?

(a) Transport
(b) Information technology
(c) Agriculture
(d) Manufacturing

Q29. What type of pressure develops over the Indian subcontinent during the summer, attracting monsoon winds?

(a) Anti-cyclonic high over land
(b) Low pressure over land
(c) High pressure over land
(d) Cyclonic high over land

Q30. Which type of reaction is involved in the rusting of iron?

(a) Displacement
(b) Redox
(c) Combination
(d) Decomposition

Q31. In which year was the National Disaster Response Force (NDRF) formed under the Disaster Management Act of 2005?

(a) 2005
(b) 2007

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(c) 2006
(d) 2004

Q32. Which Constitutional Amendment added the words 'Socialist', 'Secular' and 'Integrity' to the Preamble of the Indian Constitution?
(a) 42nd Amendment
(b) 38th Amendment
(c) 52nd Amendment
(d) 44th Amendment

Q33. Who among the following was the first Indian athlete to win an Olympic gold medal?
(a) Abhinav Bindra
(b) Milkha Singh
(c) Neeraj Chopra
(d) KD Jadhav

Q34. On May 20, 2025, the Supreme Court has made minimum how many years of legal practice mandatory for entry into the judicial service?
(a) 2 years
(b) 4 years
(c) 5 years
(d) 3 years

Q35. Which of the following substances is classified as an elastomer?
(a) Tissue in Veins
(b) Tissue in Kidney
(c) Tissue in Pancreas
(d) Tissue of Aorta

Q36. As in May 2025, who was the Chairman of the National Highways Authority of India (NHAI)?
(a) Santosh Kumar Yadav
(b) Shri Alok Deepankar
(c) Vishal Chauhan
(d) Anil Choudhary

Q37. Which of the following is an epigraphic record for the reign of King Harsha?
(a) Banskhera Copper Plate
(b) Nalanda Seals
(c) Aihole Inscription
(d) Allahabad Pillar Inscription

Q38. Which city hosted the inaugural World Audio Visual & Entertainment Summit (WAVES) in May 2025?
(a) Bengaluru
(b) Mumbai
(c) Hyderabad
(d) Chennai

Q39. Who among the following was conferred with a Padma Vibhushan Award 2025 (Posthumous) in the field of literature in April 2025?
(a) Shri Shekhar Kapur
(b) Shri MT Vasudevan Nair
(c) Dr. Duvvur Nageshwar Reddy
(d) Shri Nandamuri Balakrishna

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Q40. What does CPU stand for in computer systems?

(a) Central Processing Unit
(b) Control Processing Unit
(c) Computer Processing Unit
(d) Central Program Unit

MATHEMATICS

Q41. Evaluate: (-9) - (-60) ÷ (-10) + (-2) × 7

(a) -32
(b) -31
(c) -28
(d) -29

Q42. The value of 5/2+(1/(1+3/8))-5/3 is

(a) 106/59
(b) 103/66
(c) 95/69
(d) 113/72

Q43. Which of the following numbers divides 541096943?

(a) 103
(b) 97
(c) 87
(d) 107

Q44. If $\cot^2\theta=1/(1-a^2)$, $|a| < 1$, and θ is an acute angle, then find the value of $(\sec\theta + \text{cosec}\,\theta \tan^3\theta)$.

(a) $(2-a^2)^{(3/2)}$
(b) $(4 - a^2)$
(c) $(a^2 - 8)$
(d) $(2-a)^{(3/2)}$

Q45. A product is marked at Rs. 7,500. Two successive discounts of 8% and 5% are offered. What is the final selling price?

(a) Rs. 5,655
(b) Rs. 6,555
(c) Rs. 5,125
(d) Rs. 4,525

Q46. Simplify: $3((4/3)x^2-24x+18) - 4(x^2+7x-18)$

(a) 100x + 126
(b) −100x + 126
(c) −100x − 126
(d) 100x − 126

Q47. The selling price of 50 books is equal to the cost price of 16 books. Find the loss or gain percentage.

(a) 100/34% gain
(b) 68% gain
(c) 68% loss
(d) 100/34% loss

Q48. In triangle ABC, BD ? AC at D and angle DBC = 29°. E is a point on BC such that angle CAE = 25°. What is the measure of angle AEB?

(a) 100°
(b) 86°

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(c) 93°
(d) 90°

Q49. An open metallic box is 60 cm long, 40 cm wide and 23 cm high. Its thickness is 3 cm. If 1 cm^3 of metal used in the box weighs 0.5 grams, find the weight (in kg) of the box.
(a) 8.46
(b) 9.24
(c) 10.82
(d) 10.42

Q50. M and N start a business. M invests Rs. 39,000 more than N for 4 months and N invests for 7 months. M's share is Rs. 508 more than that of N, out of a total profit of Rs. 4,064. Find the capital contributed by M.
(a) Rs. 70,322
(b) Rs. 70,391
(c) Rs. 70,243
(d) Rs. 70,200

Q51. On a marked price of Rs. 5,000, a dealer offers successive discounts of 10% and 5%. Find the selling price.
(a) Rs. 4,320
(b) Rs. 4,250
(c) Rs. 4,280
(d) Rs. 4,275

Q52. The population of a district is 374000, out of which 165000 are males. 21% of the population is literate. If 40% males are literate, then what percentage of females are literate?
(a) 8%
(b) 6%
(c) 7%
(d) 5%

Q53. Two pipes can fill a cistern, individually, in 16 minutes and 32 minutes, respectively. There is a pipe located at the bottom of the cistern to empty it. If all the three pipes are opened simultaneously, then the empty cistern gets filled in 12 minutes. How long will the pipe at the bottom of the tank take to empty the completely filled cistern if no other pipe is then open?
(a) 192 minutes
(b) 144 minutes
(c) 160 minutes
(d) 96 minutes

Q54. Find the mean proportional of 490 and 10.
(a) 70
(b) 67
(c) 68
(d) 71

Q55. Find the value of: $[616 \div \{26 + 9 \times (5 - 7)\}]$.
(a) 78
(b) 79
(c) 77
(d) 82

Q56. The average weight (in kg) of a family of five members, whose weights are 40 kg, 49 kg, 56 kg, 74 kg, and 39 kg, is:
(a) 52.6
(b) 50.6
(c) 53.6
(d) 51.6

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Q57. A, B and C started a business investing Rs. 1,340, Rs. 1,100 and Rs. 2,440, respectively. If B's share in the profit earned by them is Rs. 814, what is the difference in the profit (in Rs.) earned by A and C?

(a) Rs. 811
(b) Rs. 815
(c) Rs. 816
(d) Rs. 814

Q58. The sum of two numbers is 84 and their L.C.M. is 120. What are the two numbers?

(a) 65, 19
(b) 60, 24
(c) 53, 31
(d) 58, 26

Q59. The LCM of the numbers 5.1 and 0.102 is:

(a) 51
(b) 5.1
(c) 0.51
(d) 0.051

Q60. The simple interest on a certain sum for 41/5 years at the rate of 2.5% per annum is Rs. 8,400. What will be the amount payable on the same sum at the rate of 8.1% per annum simple interest in 101/4 years?

(a) Rs. 1,46,429
(b) Rs. 1,46,416
(c) Rs. 1,46,420
(d) Rs. 1,46,404

Q61. The average price of three items of furniture is Rs. 16860. If their prices are in the ratio 3:5:7, the price of the costliest item (in Rs.) is

(a) 23604
(b) 7868
(c) 10116
(d) 5620

Q62. Amit bought some erasers at the rate of Rs. 150 a dozen. He sold them for Rs. 42 each. His profit percentage is _____%.

(a) 236
(b) 240
(c) 234
(d) 238

Q63. What is the area (rounded off to the nearest integer) of a triangle whose three sides measure 11 cm, 15 cm and 16 cm?

(a) 79 cm^2
(b) 82 cm2
(c) 84 cm2
(d) 87 cm2

Q64. In covering a distance of 60 km, Pranay takes 6 hours more than Aman. If Pranay doubles his speed, then he would take 9 hours less than Aman. Pranay's speed is:

(a) 12 km/hr
(b) 2 km/hr
(c) 11 km/hr
(d) 9 km/hr

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Q65. By how much is 65% of 55 greater than 2/5 of 15?

(a) 26.75
(b) 23.75
(c) 29.75
(d) 27.25

Q66. 5 years ago, the age of a father was 11 years more than twice his son's age. After how many years, from now, will he be twice his son's age?

(a) 10
(b) 4
(c) 5
(d) 6

Q67. Find the simple interest (in Rs.) on Rs. 1,200 at an interest rate of 4% per month for 4 months.

(a) Rs. 16
(b) Rs. 32
(c) Rs. 36
(d) Rs. 192

Q68. The product of two consecutive natural numbers is 600. The greater of the two numbers is:

(a) 31
(b) 25
(c) 40
(d) 16

Q69. A man riding on a bicycle at a speed of 24 km/hr crosses a bridge in 3.1 minutes. Find the length of the bridge.

(a) 0.34 km
(b) 1.24 km
(c) 0.62 km
(d) 1.64 km

Q70. Pipe A can fill a tank in 20 hours, pipe B can fill the same tank in 25 hours and pipe C can fill the same tank in 10 hours. The time taken by them to fill the same tank if they operate together is::

(a) 25/19 hours
(b) 55/19 hours
(c) 115/19 hours
(d) 35/19 hours

GENERAL INTELLIGENCE AND REASONING

Q71. What will come in the place of the question mark (?) in the following equation, if '+' and '−' are interchanged and '×' and '÷' are interchanged?

72 × 3 − 8 ÷ 5 + 31 = ?

(a) 33
(b) 35
(c) 37
(d) 31

Q72. 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) ICWS
(b) DXRN
(c) KFYU

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(d) NHBX

Q73. If 1 is added to each odd digit and 2 is subtracted from each even digit in the number 8147563, what will be the sum of the digits that are second from the left and second from the right?

(a) 14
(b) 4
(c) 10
(d) 6

Q74. MJRN is related to KHPL in a certain way based on the English alphabetical order. In the same way, PMUQ is related to NKSO. To which of the given options is SPXT related, following the same logic?

(a) NQRV
(b) QNRV
(c) NQVR
(d) QNVR

Q75. Seven boxes A, B, C, D, E, F and G are kept one over the other but not necessarily in the same order. D is kept immediately above A. G is kept immediately above B. Only E is kept above C. Only two boxes are kept above D. G is not kept at the third position from the bottom. How many boxes are kept above G?

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

Q76. I is the daughter of X. K is the son of R. X is married to Z. Z is the mother of N. F is married to R. F is the brother of X. How is X related to K?

(a) Father's father
(b) Mother's brother
(c) Father's brother
(d) Father

Q77. Town P is to the south of Town Q. Town R is to the west of Town Q. Town S is to the west of Town R. Town T is to the north of Town S and also to the south of Town U. What is the position of Town U with respect to Town S?

(a) West
(b) East
(c) South
(d) North

Q78. 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) PS−RU
(b) YB−ZF
(c) EH−GJ
(d) IL−KN

Q79. In the following number-pairs, the second number is obtained by applying certain mathematical operations to the first number. Select the set in which the numbers are related in the same way as are the numbers of the following sets.

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

300, 194 315, 209

(a) 272, 166
(b) 255, 159
(c) 288, 180

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(d) 240, 124

Q80. In a certain code language, ‘LOAN’ is coded as ‘4257’ and ‘NIKE’ is coded as ‘1346’. What is the code for ‘N’ in the given code language?

(a) 1
(b) 6
(c) 7
(d) 4

Q81. This question is based on the five, three-digit numbers given below. (Left) 512 648 729 378 462 (Right)

(Example- 697 – First digit = 6, second digit = 9 and third digit = 7) (NOTE: All operations to be done from left to right.)

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

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

Q82. I, J, K, L, O, P and Q are sitting around a circular table, facing the centre of the table. P sits third to the left of K. O sits second to the left of J. Only K sits between Q and O. L is not an immediate neighbour of P.

How many people sit between I and O when counted from the right of I?

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

Q83. What should come in place of the question mark (?) in the given series?

890 891 893 896 900 ?

(a) 903
(b) 906
(c) 905
(d) 904

Q84. Seven boxes P, Q, R, S, X, Y and Z are kept one over the other, but not necessarily in the same order. Z is kept second from the bottom. Only three boxes are kept between Z and R. X is kept at one of the positions below Z. Only S is kept between R and Y. P is kept at one of the positions above R. How many boxes are kept between Q and R?

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

Q85. What should come in place of the question mark (?) in the given series?

56 58 63 73 90 ?

(a) 115
(b) 112
(c) 114
(d) 116

Q86. 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) CXZ
(b) OJL
(c) ZTW
(d) IDF

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Q87. In a certain code language, ‘learning is lifelong’ is written as ‘fk mb tb’ and ‘is school over’ is coded as ‘jt mt fk’. How is ‘is’ coded in the given language?

(a) jt
(b) tb
(c) fk
(d) mb

Q88. A, B, C, D, E, F and G are sitting around a circular table facing the centre. B sits third to the left of G. C sits second to the left of B. F sits to the immediate right of D. E sits to the immediate right of G. How many people sit between A and D when counted from the left of A?

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

Q89. Bimal starts from Point Y and drives 44 km towards south. He then takes a left turn, drives 56 km, turns right and drives 37 km. He then takes a right turn and drives 23 km. He takes a right turn, drives 28 km. He then turns right, drives 38 km, turns left and drives 53 km, turns right and drives 19 km to stop 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.)

(a) 90 km towards west
(b) 87 km towards east
(c) 92 km towards east
(d) 84 km towards south

Q90. What should come in place of the question mark (?) in the given series based on the English alphabetical order?

UNA OHU IBO CVI ?

(a) WSP
(b) WPC
(c) WPS
(d) WCP

Q91. Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete?

DLY 15, BJW 22, ZHU 29, XFS 36, ?

(a) VDP 41
(b) WER 43
(c) VDQ 43
(d) VER 42

Q92. Read the given statement(s) 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 statement(s).

Statements:

Some crafts are handlooms.

All shawls are handlooms.

Conclusions:

(I) Some crafts are shawls.

(II) All handlooms are shawls.

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

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Q93. Refer to the following number and symbol series and answer the question that follows. Counting to be done from left to right only.

(Left) 5 8 £ 1 7 & $ $ 7 # 4 1 8 9 @ 7 5 7 £ @ 2 & (Right)

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

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

Q94. DJMS is related to FORU in a certain way based on the English alphabetical order. In the same way, LDGA is related to NILC. To which of the given options is RSVG related, following the same logic?

(a) TAXI
(b) TIXA
(c) TXAI
(d) TXSW

Q95. Each of the digits in the number 2516984 is arranged in the ascending order from left to right. What will be the sum of the digits that are third from the left and third from the right in the new number thus formed?

(a) 12
(b) 10
(c) 9
(d) 7

Q96. 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.

ABLE - BLAE - ELBA

ITEM - TEIM - METI

(a) SACK - ASCK - KACS
(b) OPEN - OEPN - NEPO
(c) SLOT - LOST - TOLS
(d) CAME - AMCE - AMEC

Q97. 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:

Some laptops are computers.

No computer is a mobile.

Conclusions (I): No laptop is a mobile.

Conclusions (II): Some laptops are mobile.

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

Q98. What should come in place of the question mark (?) in the given series?

191 192 196 205 221 ?

(a) 231
(b) 241
(c) 236
(d) 246

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Q99. Each of the digits in the number 5648321 is arranged in ascending order from left to right. What will be the sum of the digits that are second from the left and second from the right in the new number thus formed?

(a) 4
(b) 6
(c) 5
(d) 8

Q100. In a row of certain number of people facing north, Rahul is sitting 245th from the left end and 19th from the right end. What is the total number of people in that row?

(a) 226
(b) 236
(c) 263
(d) 264

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (a) Pope Leo XIV

The Correct answer is Pope Leo XIV.

Key Points

• Pope Leo XIV is a hypothetical name chosen for Cardinal Robert Prevost after his election as the first American pope.

• In the history of the Catholic Church, popes often select a papal name that reflects their spiritual inspiration, mission, or homage to past popes.

• The name Leo has been historically associated with leadership, reform, and advocacy for the Church.

• The title "XIV" indicates the continuation of the legacy of the previous popes named Leo.

• By adopting the name Leo XIV, the pope could signify a commitment to addressing modern challenges while upholding traditional values.

• The choice of a name holds significant symbolic value, as it reflects the pope's priorities and guiding principles during their papacy.

• The election of the first American pope signifies a momentous occasion in the global representation of the Catholic Church.

Additional Information

• Pope John XXIV

• The name John is the most commonly chosen papal name and has been adopted by 23 popes in history.

• It symbolizes simplicity, humility, and devotion to Christ.

• Pope John XXIII, the last pope named John, is remembered for convening the Second Vatican Council (1962–1965), which introduced significant reforms in the Church.

• Pope Benedict XVII

• The name Benedict is associated with peace, humility, and the monastic tradition, inspired by Saint Benedict of Nursia.

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• The last pope to use this name was Pope Benedict XVI, who resigned in 2013, becoming the first pope to step down voluntarily in over 600 years.

• Pope Francis II

• The name Francis was first adopted by Pope Francis, the current pope, in honor of Saint Francis of Assisi, symbolizing poverty, humility, and care for the environment.

• If chosen, Pope Francis II would indicate a continuation of the current pope's mission and values.

Q2. Answer: (b) Synaptic cleft

The Correct answer is Synaptic cleft.

Key Points

• The synaptic cleft is the small gap or space between two neurons where nerve impulses are transmitted from one neuron to another.

• This gap is a part of the synapse, which is the junction between two nerve cells.

• The communication occurs through the release of neurotransmitters from the axon terminal of the presynaptic neuron into the synaptic cleft.

• These neurotransmitters then bind to specific receptors on the dendrite of the postsynaptic neuron, facilitating the transmission of the signal.

• The process of neurotransmitter release and binding is crucial for the functioning of the nervous system, enabling processes such as movement, thought, and sensation.

• The synaptic cleft ensures that the transmission of signals is unidirectional and precise.

• It plays a significant role in neuroplasticity, which is the brain's ability to adapt by strengthening or weakening synaptic connections.

Additional Information

• Node gap

• The term "node gap" is not a recognized term in neuroscience. It may confuse with the Nodes of Ranvier, which are gaps in the myelin sheath of a nerve cell that facilitate the rapid transmission of nerve impulses.

• The Nodes of Ranvier are part of the axon and play a role in saltatory conduction, which increases the speed of signal transmission in myelinated neurons.

• Dendritic cleft

• The term "dendritic cleft" is not commonly used in neuroscience. It may incorrectly suggest a structure involving dendrites, but dendrites are parts of the neuron that receive signals, not a specific gap like the synaptic cleft.

• Dendrites contain receptors that bind to neurotransmitters released across the synaptic cleft.

• Axonal gap

• "Axonal gap" is not a standard term in neuroscience. It may mistakenly imply a gap in the axon, which does not occur in the normal structure of a neuron.

• The axon is responsible for transmitting signals away from the neuron's cell body to other neurons or muscles.

Q3. Answer: (d) Subsistence farming

The correct answer is Subsistence farming.

Key Points

• Subsistence farming is a type of farming where small landholdings are used to grow crops.

• In this method, simple tools and traditional agricultural techniques are primarily employed.

• The main objective of subsistence farming is to produce food mainly for the consumption of the farmer's family, with little to no surplus for trade or sale.

• It is prevalent in rural areas of India and is practiced by small and marginal farmers.

• Common crops grown include wheat, rice, maize, and pulses, depending on the regional climate and soil type.

• It is largely rain-fed, making it highly dependent on the monsoon season.

• Subsistence farming has been a traditional agricultural practice in India for centuries, especially in regions with limited resources and poor infrastructure.

• This form of farming is characterized by low productivity due to the lack of modern techniques and tools.

Additional Information

• Plantation Farming

• Plantation farming involves cultivating a single crop on a large scale for commercial purposes.

• It is common in tropical regions and is used for crops like tea, coffee, rubber, and cotton.

• This farming type requires a large investment, modern machinery, and skilled labor.

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• Commercial Farming
• Commercial farming focuses on producing crops and livestock for sale in markets, often on a large scale.
• This type of farming uses modern technologies, fertilizers, pesticides, and irrigation systems.
• It is practiced in regions with good infrastructure and connectivity to markets.
• Commercial Grain Farming
• Commercial grain farming involves growing grains like wheat, rice, and maize, primarily for sale.
• It is common in developed countries with large landholdings and mechanized farming techniques.
• This form of farming often focuses on exporting grain to other countries.

Q4. Answer: (a) Tropical deciduous forests

The Correct answer is Tropical Deciduous Forests.

Key Points

• Tropical Deciduous Forests are also known as Monsoon Forests and are the most widespread forests in India.
• These forests are characterized by hardwood trees such as sal, teak, bamboo, sandalwood, and shisham, which are prized for their durability and economic value.
• The trees in these forests shed their leaves during the dry season to conserve water and grow back during the monsoon.
• They are found in regions with an annual rainfall of 70 to 200 cm, which includes parts of Madhya Pradesh, Chhattisgarh, Odisha, Jharkhand, and the Western Ghats.
• The forests are divided into moist deciduous and dry deciduous types, depending on the amount of rainfall received.
• Moist deciduous forests thrive in areas receiving rainfall between 100 to 200 cm, while dry deciduous forests are found in areas with rainfall between 70 to 100 cm.
• These forests support a rich biodiversity and are home to several wildlife species such as elephants, tigers, and deer.
• The economic importance of these forests is immense due to the availability of valuable timber, which is used for construction, furniture, and other purposes.

Additional Information

• Thorn Forests
• Thorn forests are found in arid and semi-arid regions of India where the annual rainfall is less than 70 cm.
• They consist of trees like acacia, babul, khejri, and date palm, which are drought-resistant and have thorns to minimize water loss.
• These forests are commonly found in the Thar Desert and parts of Rajasthan, Gujarat, and Haryana.
• Tropical Evergreen Forests
• Tropical evergreen forests are found in regions receiving more than 200 cm of rainfall annually.
• These forests remain green throughout the year due to the absence of a distinct dry season.
• They are located in areas like the Western Ghats, Andaman and Nicobar Islands, and parts of the North-Eastern states.
• Common trees include mahogany, rosewood, and rubber.
• Montane Forests
• Montane forests are found in hilly and mountainous regions of India, such as the Himalayas, Nilgiris, and Western Ghats.
• They vary according to altitude, with tropical evergreen forests at lower elevations, temperate forests at moderate elevations, and alpine forests at higher altitudes.
• Common species include oak, pine, deodar, and rhododendron.

Q5. Answer: (c) ROM

The correct answer is ROM.

Key Points

• Read-Only Memory (ROM) is a type of non-volatile memory, meaning it retains its data even when the computer is turned off.
• ROM is primarily used to store firmware, which is the software that is permanently programmed into hardware devices.
• It is a crucial component in computers and other electronic devices as it contains startup instructions for the device (like the BIOS in computers).
• Unlike RAM, which is volatile and loses its contents when power is cut off, ROM ensures that vital data is retained permanently.
• ROM comes in several types, including PROM, EPROM, and EEPROM, each with unique features for rewriting or programming data.
• Examples of ROM usage include embedded systems, gaming consoles, printers, and microcontrollers.
• ROM is critical for maintaining the integrity of the system's boot process and ensuring smooth hardware operations.

Additional Information

• Virtual Memory

• Virtual Memory is a memory management technique that allows a computer to use more memory than is physically installed by utilizing storage space (like a hard disk) as an extension of RAM.

• It is not a physical memory but rather a simulated memory created by the operating system.

• This helps in running large applications or multitasking efficiently.

• Cache Memory

• Cache Memory is a small and fast type of memory located close to the CPU for storing frequently accessed data and instructions.

• It is a volatile memory and loses its contents once the system is powered down.

• Cache memory significantly increases processing speed by reducing the time to access data from the main memory (RAM).

• RAM

• Random Access Memory (RAM) is a volatile memory that temporarily stores data and instructions currently in use by the CPU.

• Data stored in RAM is lost when the computer is powered off.

• RAM is essential for multitasking and ensuring the smooth operation of applications.

Q6. Answer: (a) Rabi 1999-2000

The Correct answer is Rabi 1999-2000.

Key Points

• The National Agricultural Insurance Scheme (NAIS) was launched during the Rabi season of 1999-2000.

• The main objective of this scheme was to provide insurance coverage and financial support to farmers in the event of failure of crops due to natural calamities such as droughts, floods, hailstorms, cyclones, pests, and diseases.

• The scheme was introduced by the Government of India to replace the earlier Comprehensive Crop Insurance Scheme (CCIS).

• It is applicable to all crops, including food crops, oilseeds, and commercial or horticultural crops.

• The scheme is implemented by the Agricultural Insurance Company of India (AIC) in coordination with the respective state governments.

• Premium rates are subsidized for small and marginal farmers, ensuring inclusivity for economically weaker farmers.

• NAIS is a social security measure aimed at reducing the financial burden on farmers in case of crop failures due to unforeseen circumstances.

Additional Information

• Kharif 2001-2002

• This option indicates a different agricultural season, but the NAIS was not launched during this period.

• The Kharif season primarily includes monsoon-dependent crops, such as rice, maize, and cotton, but it does not relate to the launch of NAIS.

• Rabi 2005-2006

• This option refers to a later season when the NAIS had already been launched and operational for several years.

• However, the scheme was introduced much earlier in Rabi 1999-2000.

• Kharif 1998-1999

• This date precedes the actual launch of the scheme.

• The NAIS was not operational during this period, as it was officially introduced in the Rabi 1999-2000 season.

Q7. Answer: (b) Hindustan Shipyard Ltd., Visakhapatnam

The correct answer is Hindustan Shipyard Ltd., Visakhapatnam.

Key Points

• The Keel Laying ceremony marks a significant step in the construction of a ship, where the keel (the backbone of the ship) is laid down, symbolizing the formal start of the ship's construction.

• This ceremony for the first Fleet Support Ship (FSS) for the Indian Navy took place at the Hindustan Shipyard Ltd., located in Visakhapatnam, Andhra Pradesh.

• Hindustan Shipyard Ltd. is a premier shipbuilding organization in India, known for its expertise in building and repairing ships and submarines.

• The Fleet Support Ships (FSS) are designed to provide logistical support to naval vessels, including fuel, provisions, and ammunition.

• The project is a part of India’s initiative to enhance its indigenous shipbuilding capabilities, aligned with the ‘Make in India’ campaign.

• This development strengthens the Indian Navy's operational capabilities and supports its strategic objectives in the Indian Ocean

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region.

Additional Information

• Mazagon Dock Shipbuilders Ltd., Cochin

• Mazagon Dock Shipbuilders Ltd., located in Mumbai, Maharashtra, is a leading shipyard known for constructing warships and submarines for the Indian Navy.

• It has built significant naval projects, including Scorpene-class submarines and destroyers like the INS Kolkata.

• Goa Shipyard Limited

• Located in Goa, this shipyard specializes in building offshore patrol vessels, fast patrol vessels, and other medium-sized naval vessels.

• It plays a critical role in supporting coastal security and shipbuilding for the Indian Navy and Coast Guard.

• ABG Shipyard Ltd., Mumbai

• ABG Shipyard Ltd., based in Surat, Gujarat, was previously one of India's largest private shipbuilding companies.

• It focused on constructing commercial ships like bulk carriers and container ships, but it faced financial difficulties in recent years.

Q8. Answer: (d) Lord Cornwallis

The correct answer is Lord Cornwallis.

Key Points

• Lord Cornwallis introduced the Permanent Settlement in 1793 during his tenure as the Governor-General of India.

• The Permanent Settlement was an agreement between the British East India Company and the zamindars (landowners) of Bengal, Bihar, and Orissa.

• Under this system, the zamindars were given hereditary rights to collect revenue from the peasants and pay a fixed amount to the government.

• The revenue amount was fixed permanently, meaning it would not increase over time regardless of changes in agricultural productivity or inflation.

• The system was intended to ensure a steady revenue flow for the British government and to promote investment in agriculture by zamindars.

• However, it had adverse effects on the peasants, as they were often exploited by the zamindars and burdened with high rents.

• This system also led to landlessness among peasants and a decline in agricultural productivity due to a lack of incentives for the zamindars to improve land quality.

Additional Information

• Lord Dalhousie

• Lord Dalhousie served as the Governor-General of India from 1848 to 1856.

• He is best known for his Doctrine of Lapse, which allowed the British to annex princely states if their rulers died without a male heir.

• He also introduced the railway system, postal services, and telegraph lines in India.

• Lord Wellesley

• Lord Wellesley was the Governor-General of India from 1798 to 1805.

• He is known for his policy of Subsidiary Alliances, which aimed to establish British supremacy in India by forcing Indian rulers to accept British protection.

• He also played a significant role in expanding British territories in India.

• Thomas Munro

• Thomas Munro was a British administrator and Governor of Madras from 1820 to 1827.

• He introduced the Ryotwari System in the Madras Presidency, under which revenue was collected directly from the peasants.

• This system aimed to eliminate the role of intermediaries like zamindars.

Q9. Answer: (b) Kathakali

The correct answer is Kathakali.

Key Points

• Kathakali is a classical dance-drama form originating from Kerala, India.

• It is characterized by elaborate facial makeup, colorful costumes, and intricate movements.

• Themes in Kathakali performances are primarily drawn from Hindu epics like the Ramayana and Mahabharata.

• Male dancers traditionally perform Kathakali, even taking up female roles, though modern performances may include female artists.

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• The makeup includes bold and stylized features, with colors symbolizing different emotions and characters, such as green for heroes and noble characters, and red for villains.
• Kathakali music is performed using traditional instruments like the chenda, maddalam, idakka, and cymbals.
• The dance form is known for its expressive gestures or 'mudras', which are used to convey the story and emotions.
• Training for Kathakali is rigorous and involves mastering intricate movements, expressions, and stamina.

Additional Information

• Kathak
• Kathak is another classical dance form, originating in North India.
• It is characterized by intricate footwork, spins, and storytelling, often accompanied by ghungroos (ankle bells).
• Kathak performances are influenced by both Hindu and Mughal traditions.
• The themes often revolve around Lord Krishna and his stories.
• Bharatanatyam
• Bharatanatyam is one of the oldest Indian classical dance forms, originating from Tamil Nadu.
• It is known for its graceful movements, sculpturesque poses, and expressions.
• The dance form is deeply rooted in devotional themes and was traditionally performed in temples.
• It is accompanied by Carnatic music.
• Mohiniyattam
• Mohiniyattam is another classical dance form from Kerala.
• This dance form is performed by female dancers and is characterized by graceful, flowing movements.
• The term 'Mohini' refers to the enchantress, and the dance is inspired by tales of Lord Vishnu as Mohini.

Q10. Answer: (a) Bharat Electronics Limited

The correct answer is Bharat Electronics Limited.

Key Points

• Bharat Electronics Limited (BEL) signed a Rs. 1,220 crore deal with the Defence Ministry of India in February 2025.
• The deal involves the supply of advanced Software Defined Radios (SDRs) to enhance the communication capabilities of the Indian Armed Forces.
• Software Defined Radios are advanced communication systems that provide secure and flexible communication among different units of the defense forces.
• The SDRs are capable of supporting voice, data, and video communication, making them highly versatile in modern warfare scenarios.
• Bharat Electronics Limited is a state-owned aerospace and defense company under the Ministry of Defence, Government of India.
• The company is headquartered in Bengaluru, Karnataka, and is a key player in India’s defense production sector.
• BEL has a strong track record of developing and producing high-quality, indigenous defense equipment to support the ‘Make in India’ initiative.

Additional Information

• Reliance Naval Systems
• Reliance Naval Systems is a part of the Reliance Group and focuses on the design and construction of warships and submarines.
• The company operates from its shipyard located at Pipavav in Gujarat, which is one of the largest dry docks in India.
• It primarily focuses on shipbuilding and has limited involvement in the development of communication systems like SDRs.
• Hindustan Shipyard
• Hindustan Shipyard Limited (HSL) is India’s premier shipbuilding yard located in Visakhapatnam, Andhra Pradesh.
• HSL specializes in shipbuilding, ship repairs, and submarine construction, with a strong focus on supporting the Indian Navy.
• It does not primarily specialize in the development of communication technologies.
• Larsen & Toubro (L&T)
• Larsen & Toubro (L&T) is a major Indian multinational engaged in technology, engineering, construction, and manufacturing.
• Its defense division focuses on systems like missile launchers, underwater platforms, and armored systems rather than advanced communication equipment like Software Defined Radios.

Q11. Answer: (b) Burzahom

The Correct answer is Burzahom.

Key Points

• Burzahom is an important archaeological site located in the Kashmir Valley, Jammu & Kashmir, India.
• This site is a prominent example of the Neolithic period and later periods of human settlement.
• Evidence of pit dwellings has been found here, indicating the unique architectural practices of the Neolithic people.
• Archaeologists have discovered traces of domesticated dogs at Burzahom, showcasing early human-animal interaction and domestication.
• Other findings include stone tools, bone tools, and artifacts related to hunting and farming practices.
• The site also provides insights into the social and economic life of people during the Neolithic period.
• Burzahom is recognized for its cultural significance and is considered one of the few sites reflecting early settlement patterns in the Kashmir region.

Additional Information

• Chirand
• Chirand is a Neolithic site located in the Saran district of Bihar, India.
• This site is known for its evidence of agriculture, pottery, and tools made of bone and stone.
• Unlike Burzahom, Chirand does not exhibit pit dwellings or evidence of domesticated dogs.
• Koldihwa
• Koldihwa is located in the Prayagraj district of Uttar Pradesh, India.
• The site is significant for its evidence of rice cultivation, dating back to the Neolithic period.
• It is associated with the use of stone tools but lacks evidence of pit dwellings or domesticated dogs.
• Hallur
• Hallur is a Neolithic site situated in Karnataka, India.
• This site is known for its evidence of early iron tools and agricultural practices.
• Hallur does not exhibit pit dwellings or domesticated dogs, which are unique to Burzahom.

Q12. Answer: (b) Kutch

The Correct answer is Kutch.

Key Points

• The Inland Mangrove of Guneri is situated in the Kutch district of Gujarat.
• This site was declared as the first Biodiversity Heritage Site (BHS) of Gujarat in January 2025.
• Kutch is known for its unique ecological diversity, including the Great Rann of Kutch, which is the world's largest salt desert.
• The Inland Mangrove ecosystem of Guneri is a rare phenomenon and represents a unique biodiversity hotspot.
• It hosts a variety of flora and fauna, contributing significantly to the ecological balance in the region.
• Under the provisions of the Biological Diversity Act, 2002, a Biodiversity Heritage Site is designated to conserve areas with rich biodiversity and ecological significance.
• The declaration of the Guneri mangrove as a BHS highlights the government’s focus on environmental conservation and sustainable development.

Additional Information

• Morbi
• Morbi is a district in Gujarat known for its ceramic industry.
• The district is famous for its tile manufacturing and contributes significantly to the economy of Gujarat.
• It is not recognized for inland mangroves or ecological heritage sites.
• Vadodara
• Vadodara, also known as Baroda, is renowned for its cultural heritage and historical significance.
• The district is famous for landmarks like Laxmi Vilas Palace, rather than ecological zones or mangroves.
• Rajkot
• Rajkot is known for its industrial and commercial developments.
• The district is not identified for inland mangrove ecosystems or biodiversity heritage sites.

Q13. Answer: (c) PM Gati Shakti

The Correct answer is PM Gati Shakti.

Key Points

• PM Gati Shakti was launched in 2020 by the Government of India.
• This initiative is a National Master Plan aimed at coordinating infrastructure projects across the country.
• The primary goal is to achieve multi-modal connectivity and ensure integrated infrastructure planning for sustainable economic

growth.

• PM Gati Shakti focuses on breaking silos among various ministries and departments, enabling seamless coordination in project execution.

• It integrates 16 ministries, including roads, railways, aviation, and power, for synchronized development.

• The plan utilizes a Geospatial Digital Platform for real-time monitoring, ensuring efficient progress and identifying bottlenecks promptly.

• Key aspects include better logistics infrastructure, reduced costs, and enhanced connectivity for both urban and rural areas.

• The initiative also aims to create jobs and boost economic competitiveness by expediting infrastructure development.

• Sectors like transport, energy, communication, and water are prioritized under this program.

• PM Gati Shakti aligns with India's broader goals of becoming a $5 trillion economy by leveraging infrastructure as a growth driver.

Additional Information

• Digital India

• Digital India was launched in 2015 to transform India into a digitally empowered society and knowledge economy.

• Key objectives include improving digital infrastructure, increasing internet penetration, and enabling digital literacy.

• Programs under Digital India include e-Governance, Digital Locker, and MyGov.

• Make in India

• Make in India was launched in 2014 to promote India as a global manufacturing hub.

• It aims to boost domestic manufacturing, attract foreign investments, and create employment opportunities.

• Key sectors targeted include automobile, electronics, pharmaceuticals, and textiles.

• Bharatmala Pariyojana

• Bharatmala Pariyojana is a road development program launched in 2017 by the Ministry of Road Transport and Highways.

• It focuses on improving highway infrastructure, connecting economic corridors, and reducing travel time.

• Projects under Bharatmala include the construction of National Highways and expressways.

Q14. Answer: (d) Jhansi

The Correct answer is Jhansi.

Key Points

• Rani Laxmibai was one of the leading figures of the Revolt of 1857, also known as the First War of Indian Independence.

• She was the Queen of Jhansi and played a pivotal role in leading the rebellion in the region of Jhansi, which is located in present-day Uttar Pradesh.

• The primary reason for her rebellion was the implementation of the Doctrine of Lapse policy by the British, which denied her adopted son the right to ascend the throne of Jhansi.

• She famously declared, "I shall not surrender my Jhansi," and fought bravely against the British forces.

• Under her leadership, Jhansi became a significant center of resistance during the revolt, inspiring others to rise against British rule.

• Her extraordinary courage and leadership earned her the title of "India's Joan of Arc."

• Rani Laxmibai's heroic actions and sacrifice in the battle against the British symbolize the spirit of resistance and patriotism in Indian history.

• The city of Jhansi, where she fought valiantly, remains a symbol of her bravery and is historically significant in the context of the Revolt of 1857.

Additional Information

• Faizabad

• Faizabad was another significant center during the Revolt of 1857.

• The revolt here was led by Maulvi Ahmadullah Shah, a prominent freedom fighter known for his military strategies and leadership.

• Kanpur

• Kanpur was a key site of the rebellion under the leadership of Nana Sahib.

• Nana Sahib, along with his general Tantia Tope, led a strong resistance against the British in Kanpur.

• Awadh

• Awadh (present-day Lucknow and surrounding areas) was another major center of the revolt.

• The leadership in Awadh was provided by Begum Hazrat Mahal, who played a crucial role in resisting British rule.

Q15. Answer: (c) Chief Minister

The Correct answer is Chief Minister.

Key Points

• The Chief Minister is the head of the Council of Ministers in a state and plays a crucial role in the functioning of the state government.

• The Governor appoints the Chief Minister, who in turn advises the Governor on the appointment of other ministers.

• As per Article 163 and Article 164 of the Indian Constitution, the Chief Minister has the authority to allocate portfolios to the ministers of the state.

• The allocation of portfolios refers to the distribution of responsibilities to the various ministers in the Council of Ministers, such as finance, health, education, etc.

• The Chief Minister ensures that the distribution aligns with the expertise and efficiency of the ministers in their respective domains.

• This power highlights the Chief Minister's position as the primary executive authority in the state government.

• The Chief Minister is also accountable to the State Legislature for the decisions and actions taken by the Council of Ministers.

Additional Information

• Prime Minister

• The Prime Minister is the head of the government at the national level in India.

• They do not have the authority to allocate portfolios for state ministers, as this function lies with the Chief Minister.

• The Prime Minister allocates portfolios to the Union Council of Ministers at the central level.

• Governor

• The Governor is the constitutional head of a state in India.

• Although the Governor formally appoints the Chief Minister and other ministers, the allocation of portfolios is done on the advice of the Chief Minister.

• The Governor acts as a nominal head, with real executive power vested in the Chief Minister and the Council of Ministers.

• Chief Justice of the High Court

• The Chief Justice of the High Court is the head of the judiciary at the state level.

• They have no role in the executive or administrative functions of the state government, including the allocation of portfolios to ministers.

• The Chief Justice primarily handles judicial matters and ensures the smooth functioning of the High Court.

Q16. Answer: (d) CoBRA Battalion

The correct answer is CoBRA Battalion.

Key Points

• The CoBRA Battalion, also known as Commando Battalion for Resolute Action, is a specialized force within the Central Reserve Police Force (CRPF).

• It was established in 2009 to tackle insurgency and counter-terrorism operations, particularly against Naxalite threats.

• This battalion is trained in guerrilla warfare and jungle warfare tactics, making it highly effective in challenging terrains.

• The decision to raise a CoBRA unit in Jammu and Kashmir is aimed at addressing the increased terrorist activities and ensuring peace and security in the region.

• The battalion is equipped with state-of-the-art weapons and technology to execute operations with precision and efficiency.

• CoBRA units have played a significant role in combating insurgents in various parts of India, including Chhattisgarh, Jharkhand, Odisha, and Bihar.

• Their deployment in Jammu and Kashmir highlights the Indian government's focus on strengthening anti-terrorist operations.

• CoBRA personnel undergo rigorous training in improvised explosive device (IED) detection, specialized weapons handling, and quick response techniques.

Additional Information

• Garud Commando Force

• The Garud Commando Force is the special forces unit of the Indian Air Force (IAF).

• They are primarily tasked with protecting IAF bases, conducting airborne operations, and undertaking special missions related to the IAF.

• The unit was established in 2004 after the Kargil War to enhance the security of Indian Air Force stations.

• Special Frontier Force (SFF)

• The Special Frontier Force (SFF), also known as Establishment 22, is a paramilitary unit operating under the Indian Army.

• It was formed in 1962 and primarily consists of personnel of Tibetan origin.

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• The SFF specializes in mountain warfare and has been involved in various covert operations.

• Para (Special Forces)

• The Para (Special Forces) is a unit of the Indian Army and is one of the oldest and most prestigious special forces in India.

• It specializes in direct action, hostage rescue, counter-terrorism, and unconventional warfare.

• Their motto is "Men apart, every man an emperor."

Q17. Answer: (a) Non-compoundable criminal offences

The Correct answer is Non-compoundable criminal offences.

Key Points

• Lok Adalat is a system of alternative dispute resolution in India where disputes are settled amicably through negotiation, mediation, and compromise.

• The cases that can be taken up by Lok Adalats include civil cases, family disputes, labour disputes, motor accident claims, and other compoundable criminal offences.

• Non-compoundable criminal offences are serious in nature and involve crimes that affect society at large, such as murder, rape, or dacoity. These cannot be compromised or settled outside court and hence, cannot be taken up by Lok Adalats.

• Such offences are dealt with under the purview of regular courts due to the severity of their consequences and the need for detailed legal proceedings.

• The Legal Services Authorities Act, 1987, under which Lok Adalats operate, specifies that only disputes that are not of a criminal nature or are compoundable can be resolved through Lok Adalats.

Additional Information

• Land acquisition cases

• Land acquisition disputes often involve compensation-related grievances and other civil matters, which can be amicably settled in Lok Adalats.

• These cases are generally resolved quickly to ensure that the affected parties receive justice without prolonged litigation.

• Motor accident claims

• Motor accident claim cases, particularly those involving compensation for injuries or death, are often taken up by Lok Adalats for quick resolution.

• These cases typically involve insurance claims and require out-of-court settlements for the benefit of the victims and their families.

• Divorce disputes under mutual consent

• Divorce cases under mutual consent are civil in nature and can be amicably resolved through Lok Adalats.

• Such cases involve agreement from both parties and do not require extensive legal proceedings, making them suitable for alternative dispute resolution mechanisms.

Q18. Answer: (a) 1921

The Correct answer is 1921.

Key Points

• Edward, Prince of Wales, visited India in 1921 as a representative of his father, King George V.

• The purpose of the visit was to express gratitude to the Indian people for their contribution during the First World War.

• The visit was part of the British effort to strengthen ties with India amidst growing nationalist sentiments during the Indian independence movement.

• This was a pivotal period marked by the rise of leaders such as Mahatma Gandhi, who were spearheading movements like the Non-Cooperation Movement against British rule.

• Edward later became King Edward VIII, although his reign was brief due to his abdication in 1936.

• The visit in 1921 included ceremonial events and interactions with various segments of Indian society, aiming to showcase British imperial authority and appreciation.

• The Indian response to the visit was mixed, with some sections welcoming it and others viewing it as a symbol of colonial dominance.

Additional Information

• Although the incorrect options are dates and do not need detailed explanation, here are some essential points related to the Key Points:

• The First World War (1914–1918) was a significant global conflict, and India contributed extensively to the Allied war effort, providing troops, resources, and supplies.

• The Indian soldiers fought in various theaters of war, including Europe, Africa, and the Middle East, with over 1.3 million soldiers participating.

• The Non-Cooperation Movement, initiated by Mahatma Gandhi in 1920, was a direct response to British policies, including the aftermath of the First World War and events like the Jallianwala Bagh massacre.

• The visit of Prince Edward in 1921 coincided with growing dissatisfaction among Indians with British governance, highlighting the complexities of colonial relationships.

Q19. Answer: (c) USA

The Correct answer is USA.

Key Points

• The USA withdrew from the OECD Global Tax Deal in January 2025, citing concerns over its implications for the country's tax policies and sovereignty.

• The OECD Global Tax Deal was designed to establish a global framework for minimum corporate tax rates and ensure multinational corporations pay taxes where they generate revenue.

• The USA's withdrawal can be attributed to domestic political opposition, as certain political factions argued the deal could disadvantage US-based businesses or reduce the government's control over tax rules.

• This decision impacted global efforts to create a more equitable taxation system and raised concerns regarding the future of multilateral agreements in the realm of international taxation.

• The USA has significant influence over global economic policies, and its withdrawal from the OECD deal created challenges for other nations in implementing the agreed framework effectively.

• The OECD tax deal was particularly aimed at addressing issues like tax avoidance by multinational corporations and establishing a fair tax regime for the digital economy.

• Countries that remained committed to the OECD Global Tax Deal had to re-evaluate their strategies and mechanisms to ensure the deal's success despite the USA's absence.

Additional Information

• Russia

• Russia is one of the largest economies but has not been a significant proponent of global tax reforms like the OECD deal.

• Its tax system is structured differently, focusing on domestic priorities rather than international frameworks.

• Russia has often maintained a cautious stance in joining global economic agreements, citing concerns over sovereignty.

• India

• India has actively supported the OECD Global Tax Deal and played a key role in international discussions on digital taxation.

• India has advocated for fair taxation of multinational corporations operating in developing economies.

• The country has implemented its own measures, such as the Equalisation Levy, targeting digital services provided by foreign entities.

• China

• China has shown support for global tax reforms under the OECD framework but has emphasized aligning these with its own economic priorities.

• China's participation in such deals is often strategic, aiming to maintain its economic competitiveness globally.

Q20. Answer: (d) 10 characters

The Correct answer is 10 characters.

Key Points

• DIGIPIN is an open-source nationwide geo-coded addressing system designed to create a standardized addressing mechanism.

• The system uses an alphanumeric code consisting of 10 characters based on latitude and longitude coordinates.

• The latitude and longitude data are used to precisely identify any location in a country, making it highly useful for postal services, delivery systems, and geographical mapping.

• This 10-character code ensures accuracy and ease of use, eliminating the need for complex addresses.

• The system is especially beneficial in rural areas where proper addresses may not exist, as it provides a standardized digital address system.

• It can be integrated with various navigation and mapping platforms to enhance location-based services.

Additional Information

• Key Importance of DIGIPIN

• The 10-character code allows for precise and unique identification of locations across the country.

• This is an open-source system, meaning it is accessible to the public and can be adapted for various applications.

• It reduces confusion in logistics and delivery services, especially in areas with ambiguous or missing addresses.

• Explanation of the Incorrect Options

• The other options, such as 6 characters, 8 characters, or 12 characters, do not align with the standardized format of DIGIPIN,

which is precisely 10 characters long.

• These options may represent hypothetical or alternative formats, but they are not applicable to DIGIPIN.

Q21. Answer: (b) Satya Deeptha Pharmaceuticals

The Correct answer is Satya Deeptha Pharmaceuticals.

Key Points

• Satya Deeptha Pharmaceuticals is an Indian pharmaceutical company known for producing high-quality generic medicines.

• In January 2025, the company announced its decision to manufacture Paracetamol domestically in India. Paracetamol is a widely used over-the-counter medication for pain relief and fever reduction.

• The decision to manufacture Paracetamol domestically aligns with the Indian government's initiative to promote local production of pharmaceuticals under the 'Atmanirbhar Bharat' (Self-reliant India) campaign.

• Manufacturing Paracetamol within the country reduces dependency on imports, especially from countries like China, which has been a major supplier of bulk drugs and active pharmaceutical ingredients (APIs).

• This initiative is expected to contribute significantly to the Make in India movement and enhance India's pharmaceutical capacity.

• Satya Deeptha Pharmaceuticals has a reputation for its focus on quality, affordability, and innovation in drug production.

• Paracetamol is one of the most common drugs globally, used in a variety of formulations, making its domestic production a strategic move for India's healthcare industry.

Additional Information

• Ajanta Pharmaceuticals

• Ajanta Pharmaceuticals is an Indian multinational company that manufactures and markets pharmaceutical products globally.

• The company specializes in therapeutic segments such as ophthalmology, dermatology, and cardiology.

• While Ajanta Pharmaceuticals is a leading name in the pharmaceutical sector, it has not been associated with domestic manufacturing of Paracetamol as of January 2025.

• Alkem Laboratories

• Alkem Laboratories, founded in 1973, is a prominent Indian company involved in the development, manufacturing, and sale of pharmaceutical and nutraceutical products.

• Although it has a strong presence in the pharmaceutical sector, the company is not linked to Paracetamol production initiatives in the given context.

• Lupin

• Lupin is one of the top pharmaceutical companies in India, focusing on branded and generic formulations, biotechnology products, and APIs.

• The company is known for its work in areas such as cardiology, diabetology, asthma, and anti-infectives. However, it was not mentioned in the context of producing Paracetamol domestically.

Q22. Answer: (b) Raahat

The Correct answer is Raahat.

Key Points

• Raahat was a joint exercise conducted by the Indian Army and the National Disaster Response Force (NDRF).

• The exercise was organized in May 2025 as a large-scale Humanitarian Assistance and Disaster Relief (HADR) simulation.

• The purpose of this exercise was to test the coordination and response of different agencies during natural disasters.

• The exercise involved disaster management drills, rescue operations, and mock scenarios to prepare teams for real-life emergencies.

• It highlighted the importance of collaboration between the Indian Army and NDRF in disaster-prone areas.

• Such exercises help in enhancing the preparedness and operational efficiency of disaster response teams.

• The ultimate goal is to minimize loss of life, reduce damage to property, and ensure the safety of affected populations during disasters.

Additional Information

• Prakampana

• Prakampana is a joint exercise primarily conducted by the Indian Army to test the preparedness of forces during natural calamities or emergencies.

• The term "Prakampana" translates to "Cyclonic Storm", symbolizing its focus on disaster management.

• It generally includes rescue and relief operations in cyclonic regions.

• Shakti

• Shakti is a bilateral military exercise conducted between the armies of India and France.

• The focus of this exercise is on counter-terrorism operations and improving interoperability between the two armies.
• The exercise is conducted alternately in India and France.
• Mitra Shakti
• Mitra Shakti is a joint exercise between the armies of India and Sri Lanka.
• The exercise focuses on counter-insurgency and counter-terrorism operations in semi-urban and rural environments.
• It aims to enhance the military cooperation and understanding between the two nations.

Q23. Answer: (b) 180°

The Correct answer is 180°.

Key Points

• The International Date Line (IDL) is an imaginary line of demarcation that runs through the 180° meridian, except for some deviations to accommodate international borders and territorial waters.
• It serves as the boundary where the calendar date changes by exactly one day when crossed.
• The IDL is not straight; it zigzags to avoid dividing landmasses or countries into two different calendar dates.
• It is located on the opposite side of the Earth from the Prime Meridian (0° longitude), which passes through Greenwich, England.
• When traveling east across the IDL, you subtract a day, and when traveling west, you add a day.
• The purpose of the IDL is to ensure a consistent global calendar system.
• The IDL runs mainly through the Pacific Ocean, avoiding disruption to populated areas.
• Countries near the IDL, such as Kiribati and Samoa, have adjusted their time zones for economic and administrative reasons, aligning with major trading partners.

Additional Information

• 90°E
• This meridian is located in the Eastern Hemisphere and passes through countries such as India, Bangladesh, and Myanmar.
• It is not related to the International Date Line, as the IDL is located at 180° longitude.
• 75°W
• It lies in the Western Hemisphere and passes through countries like Colombia, Venezuela, and the United States.
• This meridian has no connection to the International Date Line.
• 0°
• The Prime Meridian is located at 0° longitude and passes through Greenwich, England.
• It is used as the reference point for measuring longitude and time zones, but it is not the International Date Line.

Q24. Answer: (d) Class deciding rules for representation and resource sharing

The Correct answer is Class deciding rules for representation and resource sharing.

Key Points

• The Constitution serves as the foundational legal document that guides how individuals, groups, and institutions interact in a society.
• The correct option highlights a scenario where a class collectively decides rules for representation and resource sharing, which is a direct reflection of the principles embedded in the Constitution.
• The Constitution provides guidelines for collective decision-making, equitable sharing of resources, and ensuring that every individual has representation in governance or any decision-making process.
• In the given example, the class is engaging in a democratic process, which aligns with constitutional principles such as equality, justice, and fairness.
• The activity reflects the concepts of democracy, rule of law, and participative decision-making, which are fundamental tenets of the Constitution.
• By deciding rules collectively, the class is practicing a process similar to how laws and policies are formed in a constitutional democracy.
• It shows the importance of having a framework or a set of rules to ensure that every individual's voice is heard and resources are distributed equitably.

Additional Information

• Celebrating national festivals
• While national festivals represent unity and cultural pride, they do not directly reflect the need for the Constitution in daily life.
• National festivals are symbolic and celebratory in nature, focusing on heritage and patriotism, rather than governance or rule-making.
• Resolving a family dispute

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• Family disputes are typically resolved through personal, cultural, or legal mechanisms rather than directly invoking constitutional principles.

• While the Constitution lays down laws and rights, resolving family disputes is more a matter of personal or civil law.

• Buying groceries from a local store

• Buying groceries is an everyday activity that does not directly involve constitutional principles.

• However, the Constitution indirectly ensures that citizens have rights to trade, business, and access to basic resources, but this is not a direct reflection of the need for the Constitution in daily life.

Q25. Answer: (a) Parul Chaudhary

The Correct answer is Parul Chaudhary.

Key Points

• Parul Chaudhary is a prominent Indian athlete specializing in middle and long-distance running events.

• She broke the National Record in the Women's 3000 m steeplechase at the Doha Diamond League 2025.

• This achievement allowed her to qualify for the prestigious World Athletics Championships, showcasing her exceptional performance on an international platform.

• The 3000 m steeplechase is a unique track and field event that combines running with obstacles such as hurdles and water jumps, requiring both endurance and agility.

• Her record-breaking performance reflects her dedication and rigorous training in this demanding discipline.

• The Doha Diamond League is an annual athletics event that attracts top athletes from around the world to compete in various track and field events.

• Parul's success contributes significantly to the growing prominence of Indian athletes in global athletics competitions.

Additional Information

• Chaitali Borekar

• Chaitali Borekar is an Indian runner known for her participation in middle-distance events.

• Although talented, she has not achieved a national record in the 3000 m steeplechase or qualified for the World Athletics Championships as of now.

• Garima Yadav

• Garima Yadav is another Indian athlete who competes in long-distance running events.

• She has showcased potential but is yet to make her mark in events like the 3000 m steeplechase at international levels.

• Ekta Pradeep Dey

• Ekta Pradeep Dey is a promising Indian runner with expertise in various track events.

• She has not been associated with breaking records in the 3000 m steeplechase or qualifying for the World Athletics Championships.

Q26. Answer: (b) Foreign exchange reserves

The correct answer is Foreign Exchange Reserves.

Key Points

• The LPG reforms (Liberalisation, Privatisation, and Globalisation) were introduced in India in 1991 to address the economic crisis of the time.

• One of the key objectives of the reforms was macroeconomic stabilisation, which aimed to strengthen India's economy through structural adjustments.

• Post-1991 reforms, India's foreign exchange reserves improved significantly. The reserves increased from a precarious level of less than $1 billion in 1991 to robust levels in subsequent years.

• This improvement was driven by increased foreign investment, higher exports, and a more liberalised trade policy.

• Strengthened foreign exchange reserves provided India with greater economic stability and reduced its vulnerability to external economic shocks.

• The reforms also facilitated a shift towards a more open and competitive economy, encouraging growth in industries and enhancing India's global trade position.

• The improvement in foreign exchange reserves was critical in ensuring that the country could manage its imports and meet its international financial obligations.

Additional Information

• Revenue Deficit

• Revenue deficit refers to the shortfall between the government's revenue receipts and its revenue expenditure.

• While the LPG reforms aimed to improve fiscal management, addressing revenue deficit remained a gradual process.

• Revenue deficit reduction required structural reforms in taxation and government expenditure.

• Fiscal Deficit

• Fiscal deficit is the difference between total revenue and total expenditure of the government, excluding borrowings.

• Although fiscal deficit was targeted under the LPG reforms, it did not improve significantly immediately after the reforms.

• It required sustained efforts in fiscal discipline and reduction of subsidies over time.

• Rural Unemployment

• Rural unemployment refers to the lack of job opportunities in rural areas.

• Though the LPG reforms contributed to overall economic growth, addressing rural unemployment required focused initiatives like Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) implemented later.

Q27. Answer: (b) Participate morally and socially, not just legally

The Correct answer is Participate morally and socially, not just legally.

Key Points

• Citizenship comes with a set of responsibilities towards fellow citizens and society. These responsibilities are essential for ensuring societal harmony and progress.

• Participation in society should extend beyond legal obligations, emphasizing moral and social contributions such as helping others, engaging in community-building activities, and promoting ethical behavior.

• Democratic societies thrive when citizens actively engage in social activities, respecting diversity, tolerance, and inclusivity.

• Morality and social participation ensure that individuals contribute to resolving societal issues like poverty, inequality, and environmental concerns, fostering a better future for everyone.

• Legal obligations like paying taxes and following laws are vital, but moral participation ensures that citizens go above and beyond these requirements to create a compassionate and cooperative society.

• Examples of moral and social participation include volunteering, advocating for justice, supporting marginalized groups, and contributing to public welfare initiatives.

• This principle aligns with the concept of active citizenship, where individuals engage in meaningful ways to benefit their communities and societies at large.

Additional Information

• Serve in the military automatically and responsibly

• Serving in the military is not an automatic or universal requirement for every citizen in many countries. It is often a choice or obligation based on specific circumstances like national policies, age, and physical fitness.

• In countries with mandatory military service, like South Korea or Israel, citizens are required to serve for a certain period. However, this is not a universal obligation for all societies.

• Pay higher taxes than others

• Taxation is determined by a country's economic policies and income brackets. Citizens are required to pay taxes based on their earnings, but higher taxes are not necessarily a moral or social obligation for all individuals.

• Progressive taxation systems aim to ensure fairness in distributing the tax burden rather than making it a universal responsibility for all citizens to pay higher taxes.

• Maintain political silence responsibly

• Citizens in democratic societies have the right to express their political opinions. Maintaining political silence contradicts the principles of free speech and active participation in governance.

• Engaging in political discussions responsibly and respectfully is encouraged rather than remaining silent.

Q28. Answer: (c) Agriculture

The Correct answer is Agriculture.

Key Points

• Seasonal unemployment occurs when people are unemployed during certain seasons of the year due to the nature of their work being dependent on specific time periods.

• In India, the agriculture sector is most affected by seasonal unemployment. This is because agricultural activities are heavily dependent on seasons and weather conditions.

• Farmers often face unemployment during non-cropping seasons, such as the periods between sowing and harvesting or after the harvest is completed.

• Agriculture in India is primarily monsoon-dependent, leading to fluctuations in employment opportunities based on rainfall patterns.

• The prevalence of seasonal unemployment is more pronounced in rural areas, where agriculture is the primary source of livelihood.

• To tackle this issue, the government has implemented schemes like the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), which provides assured employment opportunities during off-seasons.

• Seasonal unemployment in agriculture also reflects the lack of diversification and industrialization in many rural economies of India.

Additional Information

• Transport

• The transport sector does not typically experience seasonal unemployment as it functions year-round to facilitate the movement of goods and people.

• However, certain sub-sectors like tourism-related transportation may see fluctuations due to seasonal tourism demands.

• In India, the transport sector contributes significantly to the economy, with roadways, railways, airways, and waterways operating consistently.

• Information Technology

• The Information Technology (IT) sector is not subject to seasonal unemployment because its operations are not tied to specific seasons or weather conditions.

• India's IT sector is one of the fastest-growing industries, contributing significantly to the GDP and providing employment opportunities globally.

• Major IT hubs in India include Bengaluru, Hyderabad, Pune, and Chennai.

• Manufacturing

• The manufacturing sector in India operates throughout the year, and seasonal unemployment is generally uncommon in this sector.

• Industries such as textiles, automobiles, steel, and pharmaceuticals provide year-round employment opportunities.

• The manufacturing sector is a key driver of India's economy and contributes significantly to the Make in India initiative.

Q29. Answer: (b) Low pressure over land

The Correct answer is Low pressure over land.

Key Points

• During the summer season, the Indian subcontinent experiences intense heating due to the sun's position directly overhead, especially in North India.

• This intense heating leads to the development of a low-pressure system over the landmass.

• The low-pressure area forms particularly over the Thar Desert and surrounding regions.

• The formation of this low-pressure system is crucial as it attracts the moist southwest monsoon winds from the Indian Ocean towards the Indian subcontinent.

• Monsoon winds are driven by the pressure difference between the high-pressure system over the oceans and the low-pressure system over land.

• The southwest monsoon winds bring significant rainfall to various parts of India, making it a defining feature of the Indian climate.

• The presence of the low-pressure system is a key factor for the onset of the monsoon season and its progression across the country.

Additional Information

• Anti-cyclonic high over land

• An anti-cyclonic high represents a high-pressure system, which would lead to stable and dry conditions, not suitable for attracting monsoon winds.

• Such systems are usually associated with clear skies and low rainfall.

• High pressure over land

• A high-pressure system over land would repel rather than attract winds, as winds generally move from high-pressure areas to low-pressure areas.

• This condition would lead to dry weather instead of monsoon rainfall.

• Cyclonic high over land

• A cyclonic high is not a scientifically valid term, as cyclones are associated with low-pressure systems, not high-pressure systems.

• This option appears to be incorrect as it contradicts the basic principles of atmospheric pressure systems.

Q30. Answer: (b) Redox

The Correct answer is Redox.

Key Points

• Rusting of iron is a chemical process where iron reacts with oxygen and moisture to form iron oxides, commonly called rust.

• This reaction involves both oxidation and reduction, hence it is categorized as a redox reaction.

• The oxidation process involves the loss of electrons by iron (Fe) as it forms ferrous (Fe^{2}^+) or ferric (Fe^{3}^+) ions.

• The reduction process involves oxygen being reduced by gaining electrons to form hydroxide ions (OH^-) in the presence of water.

• The overall reaction can be written as:

4Fe + 3O2 + 6H2O → 4Fe(OH)3, which eventually dehydrates to form rust (Fe2O3·xH2O).

• Moisture and oxygen are crucial for the rusting process, which is why it occurs more rapidly in humid environments.

• The formation of rust weakens the iron structure, causing damage to its strength and durability.

Additional Information

• Displacement Reaction

• A displacement reaction occurs when a more reactive element displaces a less reactive element from its compound. For example, Zn + CuSO4 → ZnSO4 + Cu.

• Rusting is not a displacement reaction as no exchange or replacement of elements occurs during the process.

• Combination Reaction

• In a combination reaction, two or more substances combine to form a single product. For example, 2H2 + O2 → 2H2O.

• Rusting is not a combination reaction because multiple reactions occur simultaneously, and it is not limited to just combining reactants into one product.

• Decomposition Reaction

• A decomposition reaction involves the breakdown of a compound into two or more substances. For example, CaCO3 → CaO + CO2.

• Rusting is not a decomposition reaction, as it involves the formation of new compounds (iron oxides) rather than breaking down existing compounds.

Q31. Answer: (c) 2006

The correct answer is 2006.

Key Points

• The National Disaster Response Force (NDRF) was formed in 2006 under the provisions of the Disaster Management Act of 2005.

• The Disaster Management Act, 2005, is a comprehensive law enacted by the Government of India to ensure effective management of disasters and mitigation efforts.

• The NDRF is a specialized force designed to respond to natural and man-made disasters, including earthquakes, floods, cyclones, and industrial accidents.

• The force operates under the authority of the Ministry of Home Affairs, Government of India.

• It is comprised of 12 battalions, drawn from various paramilitary forces such as the BSF, CRPF, ITBP, and CISF.

• NDRF personnel are trained in disaster response techniques, including search and rescue operations, medical aid, and evacuation processes.

• The establishment of NDRF has significantly enhanced India's disaster management capabilities and preparedness.

• The force has played a pivotal role in several disaster relief operations, including the Kashmir floods (2014), Kerala floods (2018), and Uttarakhand glacier disaster (2021).

Additional Information

• 2005

• The Disaster Management Act was enacted in 2005 to establish disaster management authorities at the national, state, and district levels.

• This act provided the legal framework for forming the National Disaster Management Authority (NDMA) and the NDRF.

• 2007

• No specific disaster management-related force or major event related to NDRF occurred in this year.

• 2004

• The devastating Indian Ocean tsunami occurred in 2004, leading to the realization of the need for a specialized disaster response force.

• This event underscored the importance of establishing the NDRF, which was later formed in 2006.

Q32. Answer: (a) 42nd Amendment

The Correct answer is 42nd Amendment.

Key Points

• The 42nd Amendment to the Indian Constitution was enacted in the year 1976, during the Emergency period.

• This amendment is also known as the Mini-Constitution due to the extensive changes it brought to the Constitution.

• The words “Socialist,” “Secular,” and “Integrity” were added to the Preamble of the Indian Constitution.
• These additions aimed to reflect the vision of a society based on social justice, secularism, and national unity and integrity.
• The word “Socialist” indicates the commitment to achieving economic equality and social justice.
• The term “Secular” emphasizes that the state does not favor any religion and treats all religions equally.
• The inclusion of “Integrity” underlines the importance of maintaining the unity and integrity of the nation.
• This amendment also brought significant changes to the functioning of the Parliament, Judiciary, and Executive, enhancing the power of the Central Government.

Additional Information

• 38th Amendment
• The 38th Amendment was passed in 1975 during the Emergency period.
• It made the declaration of Emergency by the President non-justiciable, meaning the courts could not question its validity.
• It also gave the President additional powers to declare different types of emergencies.
• 52nd Amendment
• The 52nd Amendment, enacted in 1985, introduced the Anti-Defection Law.
• It added the Tenth Schedule to the Constitution to curb political defection by legislators.
• This amendment aimed to ensure political stability by preventing elected members from changing parties for personal gains.
• 44th Amendment
• The 44th Amendment, passed in 1978, aimed at undoing some changes made by the 42nd Amendment.
• It restored the power of judicial review to the courts and ensured the protection of Fundamental Rights.
• It also made changes to the provisions related to the declaration of Emergency, requiring stricter conditions for its proclamation.

Q33. Answer: (a) Abhinav Bindra

The Correct answer is Abhinav Bindra.

Key Points

• Abhinav Bindra became the first Indian athlete to win an individual Olympic gold medal at the 2008 Beijing Olympics.
• He won the gold medal in the 10m Air Rifle shooting event, creating history for India.
• Abhinav Bindra is known for his consistent performances and dedication to the sport of shooting.
• He has also received several prestigious awards, including the Rajiv Gandhi Khel Ratna, India’s highest sporting honor, and the Padma Bhushan, India’s third-highest civilian award.
• Bindra is widely regarded as a pioneer in Indian shooting and has inspired numerous young athletes in the country to pursue the sport.
• His gold medal victory was a landmark achievement in Indian sports history, marking a turning point for the nation in the international sports arena.

Additional Information

• Milkha Singh
• Milkha Singh, popularly known as the ‘Flying Sikh’, was an Indian track and field athlete.
• He represented India in the 1956, 1960, and 1964 Olympics, excelling in sprinting events.
• While Milkha Singh achieved great success in athletics, he did not win an Olympic medal but remains an iconic figure in Indian sports history.
• Neeraj Chopra
• Neeraj Chopra is an Indian javelin thrower who won a gold medal at the 2020 Tokyo Olympics.
• He became the first Indian athlete to win an Olympic gold medal in athletics.
• His achievement further solidified India’s status in global sports.
• KD Jadhav
• Khashaba Dadasaheb Jadhav (KD Jadhav) was the first Indian to win an individual Olympic medal.
• He won a bronze medal in wrestling at the 1952 Helsinki Olympics.
• Despite his achievement, he did not win a gold medal.

Q34. Answer: (d) 3 years

The Correct answer is 3 years.

Key Points

• The Supreme Court of India has made it mandatory for individuals aspiring to join the judicial service to have a minimum of 3 years of legal practice starting from May 20, 2025.

• This decision ensures that judicial officers have adequate practical experience in the field of law, which is vital for performing their duties efficiently.

• The move aims to enhance the quality of judgments by ensuring judges have a firm understanding of legal procedures and the real-world challenges faced by lawyers.

• The requirement aligns with the judiciary's broader goal of maintaining a high standard of justice delivery in India.

• It is also expected to encourage lawyers to gain sufficient courtroom exposure before transitioning to the judicial service, ensuring a balanced and practical approach to decision-making.

• This reform is part of a larger framework to strengthen the judicial infrastructure and ensure the appointment of qualified and experienced professionals to judicial positions.

Additional Information

• Important Context about Judicial Services:

• The judicial service in India forms the backbone of the country's judicial administration.

• It includes roles like Judicial Magistrates and District Judges, which are essential for the functioning of the lower judiciary.

• The requirement of prior legal practice helps ensure that judges have a practical understanding of legal disputes and courtroom dynamics.

• Potential Impact of the 3-Year Rule:

• This rule is likely to create a pool of well-trained and experienced candidates for judicial appointments.

• The reform aligns with the judiciary's aim to enhance efficiency, transparency, and accountability in the justice delivery system.

Q35. Answer: (d) Tissue of Aorta

The Correct answer is Tissue of Aorta.

Key Points

• An elastomer is a material that has elastic properties, meaning it can stretch and return to its original shape without permanent deformation.

• The tissue of the aorta contains a significant amount of elastin, which is a key protein responsible for its elastic properties.

• The aorta is the largest artery in the human body and needs to be elastic to accommodate the force of blood pumped by the heart.

• The elasticity of the aorta helps in maintaining blood pressure and ensures the smooth flow of blood throughout the circulatory system.

• The elastic nature of the aortic tissue is crucial for its function as it allows the aorta to expand and contract with each heartbeat.

Additional Information

• Tissue in Veins

• Veins primarily transport deoxygenated blood back to the heart.

• The walls of veins are thin and less elastic compared to arteries because they operate under lower pressure.

• They have valves that prevent the backflow of blood, but they do not exhibit significant elastic properties like the aorta.

• Tissue in Kidney

• The kidney is an organ responsible for filtration of blood and production of urine.

• The tissues in the kidney, such as the nephrons, are specialized for filtration and absorption, not elasticity.

• Tissue in Pancreas

• The pancreas is an organ involved in the production of digestive enzymes and hormones like insulin and glucagon.

• Its tissues are not elastic but are designed for secretion and endocrine functions.

Q36. Answer: (a) Santosh Kumar Yadav

The Correct answer is Santosh Kumar Yadav.

Key Points

• Santosh Kumar Yadav serves as the Chairman of the National Highways Authority of India (NHAI).

• The NHAI is responsible for managing the development, maintenance, and management of national highways in India.

• He is an Indian Administrative Service (IAS) officer of the 1995 batch, Uttar Pradesh cadre.

• His appointment as the Chairman aligns with India's vision to enhance its infrastructure development under various government schemes such as Bharatmala Pariyojana.

• Under his leadership, the NHAI focuses on constructing sustainable and eco-friendly highways, utilizing modern technologies.

• Santosh Kumar Yadav has played a significant role in ensuring the timely execution of road infrastructure projects to promote better connectivity across India.

• The NHAI operates under the Ministry of Road Transport and Highways (MoRTH), which is crucial in implementing the

government's infrastructure goals.

Additional Information

• Shri Alok Deepankar

• Shri Alok Deepankar has not been reported to hold the position of Chairman of NHAI in May 2025.

• He is likely associated with other roles in administrative or governmental functions.

• Vishal Chauhan

• Vishal Chauhan is an IAS officer, but there is no information suggesting that he was the Chairman of NHAI in May 2025.

• He may be involved in other administrative capacities within the Indian government.

• Anil Choudhary

• Anil Choudhary is not reported to hold the position of Chairman of NHAI as of May 2025.

• His contributions might be in other areas of governance or administration.

Q37. Answer: (a) Banskhera Copper Plate

The Correct answer is Muzaffarnagar Seals.

Key Points

• Muzaffarnagar Seals are not considered an epigraphic record of King Harsha's reign.

• There is no known direct evidence linking these seals to King Harsha, who ruled during the 7th century CE.

• King Harsha's reign is known through prominent inscriptions and records such as the Banskhera Copper Plate and the Nalanda Seals, but the Muzaffarnagar Seals do not belong to this list.

• Epigraphic records typically include inscriptions on metal plates, stone, or seals that provide historical details, but these seals lack definitive evidence connecting them to Harsha.

Additional Information

• Banskhera Copper Plate

• The Banskhera Copper Plate is one of the most significant records of King Harsha's reign.

• It provides details about Harsha’s administration, his titles, and his patronage of Buddhism.

• It is written in Sanskrit and inscribed on copper plates.

• Nalanda Seals

• The Nalanda Seals were found in the ancient Nalanda University, which Harsha patronized.

• These seals confirm Harsha’s donations to the university and his association with the spread of Buddhism.

• They provide evidence of the flourishing academic and cultural environment during his rule.

• Aihole Inscription

• The Aihole Inscription is associated with the Chalukyan King Pulakeshin II, not King Harsha.

• It describes Pulakeshin’s victory over Harsha in the battle of Narmada.

• This inscription is a critical source for understanding the political landscape of early medieval India.

Q38. Answer: (b) Mumbai

The correct answer is Mumbai.

Key Points

• The inaugural World Audio Visual & Entertainment Summit (WAVES) was hosted by the city of Mumbai in May 2025.

• Mumbai, often referred to as the entertainment capital of India, is home to the Bollywood film industry, making it a fitting venue for such a summit.

• The WAVES summit brought together industry leaders, filmmakers, artists, and technology experts from across the globe to discuss innovations and trends in the audio-visual and entertainment sector.

• The summit focused on technological advancements, including the integration of Artificial Intelligence (AI), Virtual Reality (VR), and Augmented Reality (AR) in the entertainment industry.

• The event also highlighted India’s growing influence in the global entertainment market and its potential to become a hub for international collaborations.

• Mumbai serves as a hub for several media and entertainment companies, which made it an ideal location for hosting such a global event.

Additional Information

• Bengaluru

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

• It is home to major tech companies and startups, making it more focused on technology than entertainment.

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• While Bengaluru has hosted technology summits, it is not the primary hub for the entertainment industry.
• Hyderabad
• Hyderabad is renowned for its Tollywood film industry, which caters to the Telugu-speaking audience.
• The city also has a growing presence in animation and gaming industries.
• However, the city does not hold the same level of global influence in the entertainment sector as Mumbai.
• Chennai
• Chennai is the center of the Tamil film industry, also called Kollywood.
• The city is known for its contributions to South Indian cinema.
• Although significant in its regional context, Chennai is not as globally recognized as Mumbai in the entertainment sector.

Q39. Answer: (b) Shri MT Vasudevan Nair

The correct answer is Shri MT Vasudevan Nair.

Key Points

• Shri MT Vasudevan Nair is a renowned Indian author, screenplay writer, and film director from the state of Kerala.
• He is widely regarded as one of the greatest writers in Malayalam literature and is celebrated for his contributions to Indian literature and cinema.
• MT Vasudevan Nair has been awarded the Padma Bhushan and several literary awards, including the Jnanpith Award, India's highest literary honor.
• He is known for his works like "Randamoozham" (Second Turn), a retelling of the Mahabharata from Bhima's perspective, and numerous other novels and short stories that reflect the socio-cultural ethos of Kerala.
• His works often explore themes such as familial relationships, human emotions, and the changing dynamics of society.
• In April 2025, he was posthumously honored with the Padma Vibhushan, India's second-highest civilian award, for his significant contributions to the field of literature.

Additional Information

• Shri Shekhar Kapur
• Shekhar Kapur is a renowned Indian filmmaker and actor, known for his directorial works like "Bandit Queen" and "Elizabeth".
• He has received international acclaim for his films, especially for their storytelling and direction.
• Dr. Duvvur Nageshwar Reddy
• Dr. Duvvur Nageshwar Reddy is a prominent Indian gastroenterologist and the Chairman of the Asian Institute of Gastroenterology, Hyderabad.
• He is internationally recognized for his contributions to the field of gastroenterology, particularly in advanced endoscopy.
• Shri Nandamuri Balakrishna
• Nandamuri Balakrishna is a prominent actor and politician from the Indian state of Andhra Pradesh.
• He is known for his work in Telugu cinema and has appeared in numerous successful films.

Q40. Answer: (a) Central Processing Unit

The Correct answer is Central Processing Unit.

Key Points

• The Central Processing Unit (CPU) is the primary component of a computer that performs most of the processing inside the system.
• It is often referred to as the "brain" of the computer, as it handles all instructions it receives from hardware and software running on the computer.
• The CPU is responsible for arithmetic, logical, control, and input/output operations specified by the instructions in the program.
• It is made up of three main parts: the Arithmetic Logic Unit (ALU), the Control Unit (CU), and various registers.
• The Arithmetic Logic Unit (ALU) performs all arithmetic and logical operations, such as addition, subtraction, and comparison of values.
• The Control Unit (CU) directs the operation of the processor. It tells the computer's memory, ALU, and input and output devices how to respond to the program's instructions.
• CPUs are measured by their clock speed, typically in gigahertz (GHz), which indicates how many instructions per second the CPU can process.
• The CPU is an essential component of all computing devices, including desktops, laptops, tablets, and smartphones.
• Modern CPUs are often multi-core, meaning they have multiple processing units (cores) within a single chip, enabling them to handle multiple tasks simultaneously.

Additional Information

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• Control Processing Unit
• The term Control Processing Unit is not accurate. However, it might refer to the Control Unit, which is a part of the CPU.
• The Control Unit directs the data flow and execution of instructions, but it is not a standalone component.
• Computer Processing Unit
• The term Computer Processing Unit is incorrect and does not exist in computing terminology.
• It might be a misinterpretation of the term Central Processing Unit.
• Central Program Unit
• Central Program Unit is not a valid term in computer science.
• It could be mistaken for the CPU, but the CPU does not specifically handle programming—it executes instructions.

Q41. Answer: (d) -29

Shortcut Trick

Apply the BODMAS rule directly to the given expression from left to right for Division and Multiplication.

First, perform division: (−60) ÷ (−10) = 6

Next, perform multiplication: (−2) × 7 = −14

Finally, combine the results sequentially: −9 − 6 − 14 = −29

Therefore The correct answer is −29.

Alternate Method

Given:

(−9) − (−60) ÷ (−10) + (−2) × 7

Concept Used:

BODMAS Rule: Priority order is Brackets, Orders, Division, Multiplication, Addition, and Subtraction.

Calculation:

=> (−9) − [(−60) ÷ (−10)] + [(−2) × 7]

=> (−9) − (6) + (−14)

=> −9 − 6 − 14

=> −15 − 14

=> −29

Therefore The correct answer is −29.

Additional Information

BODMAS Rule

It dictates the order of operations for mathematical expressions: Brackets, Orders (powers/roots), Division, Multiplication, Addition, and Subtraction.

Sign Rules for Multiplication & Division

When two numbers have the same sign, their product or quotient is positive (− × − = +). When they have different signs, it is negative (+ × − = −).

Sign Rules for Addition & Subtraction

When adding two negative numbers, simply add their absolute values and keep the negative sign (e.g., −a − b = −(a + b)).

Q42. Answer: (b) 103/66

Shortcut Trick

Given expression: 5/2 + 1 / (1 + 3/8) − 5/3

Solve the fraction in the denominator first: 1 + 3/8 = 11/8.

Take the reciprocal to simplify the middle term: 1 / (11/8) = 8/11.

Expression becomes: 5/2 + 8/11 − 5/3

Take the LCM of 2, 11, and 3 which is 66, and solve directly:

Result = (165 + 48 − 110) / 66 = 103/66.

Therefore The correct answer is 103/66.

Alternate Method

Given:

Expression = 5/2 + 1 / (1 + 3/8) − 5/3

Concept Used:

BODMAS Rule: Brackets, Orders, Division, Multiplication, Addition, and Subtraction.

Calculations:

=> First, simplify the term inside the bracket in the denominator.

=> 1 + 3/8 = (8 + 3) / 8 = 11/8

=> Now, substitute this back into the expression.

=> Expression = 5/2 + 1 / (11/8) − 5/3

=> The reciprocal of 11/8 is 8/11.

=> The expression simplifies to: 5/2 + 8/11 − 5/3

=> Find the Least Common Multiple (LCM) of the denominators 2, 11, and 3.

=> LCM(2, 11, 3) = 66

=> Convert each fraction to have a common denominator of 66:

=> 5/2 = (5 × 33) / (2 × 33) = 165/66

=> 8/11 = (8 × 6) / (11 × 6) = 48/66

=> 5/3 = (5 × 22) / (3 × 22) = 110/66

=> Substitute these equivalent fractions back into the equation:

=> (165/66) + (48/66) − (110/66)

=> Combine the numerators over the common denominator:

=> (165 + 48 − 110) / 66

=> (213 − 110) / 66

=> 103/66

Therefore The correct answer is 103/66.

Additional Information

BODMAS Rule

Always solve mathematical expressions in the exact sequence of Brackets, Orders (powers/roots), Division, Multiplication, Addition, and Subtraction to ensure accurate calculation.

Fraction Addition & Subtraction

To add or subtract fractions having different denominators, first calculate their Least Common Multiple (LCM), convert each term to an equivalent fraction, and then combine the respective numerators.

Reciprocal Property

The reciprocal of any fraction a/b is b/a. Dividing 1 by a fraction simply flips the fraction upside down.

Q43. Answer: (b) 97

Shortcut Trick

To check divisibility by 97, use the base 100 method. Since 100 = 97 + 3, replace every 100 with 3.

Split the number 541096943 into 2-digit pairs from the right: 05, 41, 09, 69, 43.

Multiply each pair by increasing powers of 3 (1, 3, 9, 27, 81) and add them up:

=> (43 × 1) + (69 × 3) + (09 × 9) + (41 × 27) + (05 × 81) = 43 + 207 + 81 + 1107 + 405 = 1843

Apply the exact same rule to 1843 (pairs 18, 43) => 43 + (18 × 3) = 43 + 54 = 97.

Since 97 is completely divisible by 97, the original number is also exactly divisible by 97.

Therefore The correct answer is 97.

Alternate Method

Given:

Number = 541096943

Calculations:

=> Check Option 3 (87): A number is divisible by 87 if it is divisible by both 3 and 29.

=> Sum of digits of 541096943 = 5 + 4 + 1 + 0 + 9 + 6 + 9 + 4 + 3 = 41.

=> Since 41 is not divisible by 3, the number is definitely not divisible by 87.

=> Check Option 2 (97) by direct long division method:

=> 541 ÷ 97 = 5 (Quotient), Remainder = 56

=> Bring down 0 → 560 ÷ 97 = 5 (Quotient), Remainder = 75

=> Bring down 9 → 759 ÷ 97 = 7 (Quotient), Remainder = 80

=> Bring down 6 → 806 ÷ 97 = 8 (Quotient), Remainder = 30

=> Bring down 9 → 309 ÷ 97 = 3 (Quotient), Remainder = 18

=> Bring down 4 → 184 ÷ 97 = 1 (Quotient), Remainder = 87

=> Bring down 3 → 873 ÷ 97 = 9 (Quotient), Remainder = 0

=> Since the final remainder is 0, the number is completely divisible by 97.

Therefore The correct answer is 97.

Additional Information

Divisibility Rule of 3 and 9

A number is divisible by 3 (or 9) if the sum of its digits is divisible by 3 (or 9 respectively).

Osculator Method for Prime Numbers

To test divisibility by a prime number P, we can find a seed number (osculator) x such that P × k = 10x ± 1. This helps in checking divisibility by reducing the number iteratively.

Block Divisibility Trick for Divisors Near Powers of 10

For divisors near 100 (like 97 or 103), group digits into pairs from the right and multiply them by powers of the difference from 100. Sum the results to easily verify divisibility.

Q44. Answer: (a) (2-a²)^(3/2)

Shortcut Trick

=> Expression = sec θ + (1 / sin θ) × (sin³ θ / cos³ θ) = sec θ + (sin² θ / cos³ θ)

=> Expression = sec θ + (1 / cos θ) × (sin² θ / cos² θ) = sec θ + sec θ × tan² θ

=> Expression = sec θ × (1 + tan² θ) = sec θ × sec² θ = sec³ θ

=> Given cot² θ = 1 ÷ (1 − a²) → tan² θ = 1 − a²

=> sec² θ = 1 + tan² θ = 1 + 1 − a² = 2 − a²

=> Final Value = sec³ θ = (sec² θ)^(3/2) = (2 − a²)^(3/2)

Therefore The correct answer is (2 − a²)^(3/2).

Alternate Method

Given:

=> cot² θ = 1 ÷ (1 − a²)

=> cot θ = 1 ÷ √(1 − a²) = Base ÷ Perpendicular

θ

A

B

C

√(1 − a²)

1

√(2 − a²)

Calculations:

=> By Pythagoras Theorem, Hypotenuse² = Base² + Perpendicular²

=> AC² = BC² + AB² = 1² + [√(1 − a²)]²

=> AC² = 1 + 1 − a² = 2 − a²

=> Hypotenuse (AC) = √(2 − a²)

=> sec θ = Hypotenuse ÷ Base = √(2 − a²) ÷ 1 = √(2 − a²)

=> tan θ = Perpendicular ÷ Base = √(1 − a²) ÷ 1 = √(1 − a²)

=> cosec θ = Hypotenuse ÷ Perpendicular = √(2 − a²) ÷ √(1 − a²)

=> Given expression = sec θ + cosec θ × tan³ θ

=> Expression = √(2 − a²) + [√(2 − a²) ÷ √(1 − a²)] × [√(1 − a²)]³

=> Expression = √(2 − a²) + √(2 − a²) × [√(1 − a²)]²

=> Expression = √(2 − a²) + √(2 − a²) × (1 − a²)

=> Expression = √(2 − a²) × [1 + (1 − a²)] = √(2 − a²) × (2 − a²)

=> Expression = (2 − a²)^(1/2) × (2 − a²)¹ = (2 − a²)^(3/2)

Therefore The correct answer is (2 − a²)^(3/2).

Additional Information

Basic Trigonometric Identities

The three primary identities are: sin² θ + cos² θ = 1, sec² θ − tan² θ = 1, and cosec² θ − cot² θ = 1.

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Reciprocal Relations

Functions are inverses of each other: sin θ = 1/cosec θ, cos θ = 1/sec θ, and tan θ = 1/cot θ.

Geometric Interpretation

In a right-angled triangle, the trigonometric ratios are defined as relationships between sides. For example, sec θ is the ratio of the hypotenuse to the adjacent base, while cosec θ represents the ratio of the hypotenuse to the perpendicular side.

Q45. Answer: (b) Rs. 6,555

Shortcut Trick

Single equivalent discount % = X + Y − (X × Y)/100

Effective discount = 8 + 5 − (8 × 5)/100 = 13 − 0.4 = 12.6%

Selling Price = Marked Price × (100 − Effective Discount)%

Selling Price = 7500 × (100 − 12.6)/100 = 7500 × 87.4%

Selling Price = 7500 × 0.874 = 6555

Therefore The correct answer is Rs. 6,555.

Alternate Method

Given:

Marked Price (MP) = Rs. 7,500

Successive discounts = 8% and 5%

Formula Used:

Selling Price (SP) = MP × (1 − D1/100) × (1 − D2/100)

MP: Rs. 7,500

−8%

Rs. 6,900

−5%

SP: Rs. 6,555

Calculations:

=> Apply the first discount of 8% on Rs. 7,500:

=> Value after 1st discount = 7500 × (100 − 8)/100 = 7500 × 92/100 = Rs. 6,900

=> Apply the second discount of 5% on the new value Rs. 6,900:

=> Final Selling Price = 6900 × (100 − 5)/100 = 6900 × 95/100 = Rs. 6,555

Therefore The correct answer is Rs. 6,555.

Additional Information

Equivalent Successive Discount

For two successive discounts of a% and b%, the single equivalent discount is calculated by the formula: (a + b − ab/100)%.

Marked Price (MP) and Selling Price (SP)

Discount is always calculated on the Marked Price (MP). After all successive discounts are applied, the final amount is the Selling Price (SP = MP − Total Discount).

Three Successive Discounts

To calculate three successive discounts (a%, b%, and c%), first find the equivalent of a% and b%, then calculate the equivalent of that result with c%.

Q46. Answer: (b) −100x + 126

Shortcut Trick

Directly calculate the coefficients of each term by expanding mentally:

Coefficient of x^2 = 3 × (4/3) − 4 × 1 = 4 − 4 = 0

Coefficient of x = 3 × (−24) − 4 × 7 = −72 − 28 = −100

Constant term = 3 × 18 − 4 × (−18) = 54 + 72 = 126

Combining the non-zero terms gives the final simplified expression.

Therefore The correct answer is −100x + 126.

Alternate Method

Given:

Expression = 3((4/3)x^2 − 24x + 18) − 4(x^2 + 7x − 18)

Calculations:

=> Expanding the brackets by multiplying the outer numbers with each term inside:

=> [3 × (4/3)x² − 3 × 24x + 3 × 18] − [4 × x² + 4 × 7x − 4 × 18]

=> (4x² − 72x + 54) − (4x² + 28x − 72)

=> Removing brackets and distributing the negative sign correctly:

=> 4x² − 72x + 54 − 4x² − 28x + 72

=> Grouping the like terms together:

=> (4 − 4)x² + (−72 − 28)x + (54 + 72)

=> 0x² − 100x + 126

=> −100x + 126

Therefore The correct answer is −100x + 126.

Additional Information

Distributive Property

The distributive property states that a(b + c) = ab + ac. It is the fundamental rule used to expand brackets by multiplying the factor outside to every term inside the parentheses.

Combining Like Terms

Like terms in algebra are terms that contain the exact same variables raised to the identical powers. They are simplified by adding or subtracting their numerical coefficients while retaining the variable part.

BODMAS Rule

A foundational rule that determines the order of operations in calculations: Brackets, Orders, Division, Multiplication, Addition, and Subtraction.

Q47. Answer: (c) 68% loss

Shortcut Trick

Let the CP of 1 book be 1 unit.

=> Total CP of 50 books = 50 units

=> Total SP of 50 books = CP of 16 books = 16 units

=> Loss = Total CP − Total SP = 50 − 16 = 34 units

=> Loss % = (34 ÷ 50) × 100 = 68%

Therefore The correct answer is 68% loss.

Alternate Method

Given:

Selling price of 50 books = Cost price of 16 books

Formula Used:

Loss % = (Loss ÷ CP) × 100

Loss = CP − SP

Cost vs Selling Price Comparison

CP of 50 books (50 units)

SP (16 units)

Loss = 34 units

Loss % = (34 ÷ 50) × 100 = 68%

Calculations:

Let SP be the selling price of 1 book and CP be the cost price of 1 book.

=> 50 × SP = 16 × CP

=> SP ÷ CP = 16 ÷ 50

=> SP ÷ CP = 8 ÷ 25

From the ratio, let SP = 8 units and CP = 25 units.

Since CP > SP, there is a loss.

=> Loss = 25 − 8 = 17 units

=> Loss % = (17 ÷ 25) × 100

=> Loss % = 17 × 4 = 68%

Therefore The correct answer is 68% loss.

Additional Information

Direct Formula for Articles

If the Cost Price of a articles is equal to the Selling Price of b articles, then Profit % = ((a − b) ÷ b) × 100%. A negative result indicates a loss.

Marked Price & Discount

Discount is always calculated on Marked Price (MP). Selling Price (SP) = MP − Discount.

Dishonest Dealer Concept

When a dealer claims to sell at Cost Price but uses false weight, Profit % = (Error ÷ True Value) × 100%.

Q48. Answer: (b) 86°

Shortcut Trick

In right-angled triangle BDC, the sum of acute angles is 90°, so angle C = 90° − angle DBC.

=> angle C = 90° − 29° = 61°

In triangle ACE, the exterior angle at E is angle AEB.

Applying the exterior angle theorem: angle AEB = angle CAE + angle C

=> angle AEB = 25° + 61° = 86°

Therefore The correct answer is 86°.

Alternate Method

Given:

=> In triangle ABC, BD perpendicular to AC at D.

=> angle DBC = 29°

=> angle CAE = 25°

Formula Used:

=> The sum of all angles in a triangle is exactly 180°.

=> The exterior angle of a triangle is equal to the sum of the two opposite interior angles.

A

B

C

D

E

29°

25°

?

angle AEB = 86°

Calculations:

=> In right-angled triangle BDC, the angle at D is 90° (angle BDC = 90°).

=> Using the angle sum property in triangle BDC:

=> angle C + angle BDC + angle DBC = 180°

=> angle C + 90° + 29° = 180°

=> angle C = 180° − 119° = 61°

=> Since E is a point on the line segment BC, we consider triangle ACE.

=> The side CE is extended to point B, meaning angle AEB is an exterior angle of triangle ACE.

=> According to the exterior angle theorem, the exterior angle is equal to the sum of the two remote interior angles.

=> angle AEB = angle CAE + angle ACE

=> angle AEB = 25° + 61°

=> angle AEB = 86°

Therefore The correct answer is 86°.

Additional Information

Exterior Angle Theorem

The measure of an exterior angle of a triangle is always equal to the sum of the measures of its two remote interior angles.

Angle Sum Property

The sum of all internal angles of any triangle is equal to 180°. This fundamental geometric property is crucial for solving missing angle problems.

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Altitude of a Triangle

A perpendicular line segment drawn from a vertex to the opposite side (or its extension). It forms a 90° angle with the base, directly creating right-angled triangles within the main shape.

Q49. Answer: (b) 9.24

Shortcut Trick

Since the box is open at the top, thickness is deducted twice from length and width, but only once from height.

Inner dimensions: l = 60 − 6 = 54 cm, w = 40 − 6 = 34 cm, h = 23 − 3 = 20 cm.

Volume of metal = Outer Volume − Inner Volume

=> Volume = (60 × 40 × 23) − (54 × 34 × 20)

=> Volume = 55200 − 36720 = 18480 cm^3

=> Weight = (18480 × 0.5) / 1000 = 9.24 kg

Therefore The correct answer is 9.24 kg.

Alternate Method

Given:

Outer length (L) = 60 cm

Outer width (W) = 40 cm

Outer height (H) = 23 cm

Thickness (t) = 3 cm

Weight of 1 cm^3 metal = 0.5 grams

Formula Used:

Inner length (l) = L − 2t

Inner width (w) = W − 2t

Inner height (h) = H − t (since the box is open at the top)

Volume of metal = Outer Volume − Inner Volume = (L × W × H) − (l × w × h)

Top View

60 cm

40 cm

t = 3 cm

Inner Space

Cross-Section (Front)

23 cm

20 cm

t = 3 cm

Cavity

Calculations:

=> Inner length (l) = 60 − 2 × 3 = 60 − 6 = 54 cm

=> Inner width (w) = 40 − 2 × 3 = 40 − 6 = 34 cm

=> Inner height (h) = 23 − 3 = 20 cm

=> Outer Volume = 60 × 40 × 23 = 55200 cm^3

=> Inner Volume = 54 × 34 × 20 = 36720 cm^3

=> Volume of metal used = 55200 − 36720 = 18480 cm^3

=> Total Weight = 18480 × 0.5 = 9240 grams

=> Total Weight in kg = 9240 ÷ 1000 = 9.24 kg

Therefore The correct answer is 9.24 kg.

Additional Information

Open vs Closed Box Dimensions

For a completely closed box of uniform thickness t, the inner dimensions are obtained by subtracting 2t from all outer dimensions (L, W, H). For an open box, 2t is subtracted from length and width, but only t is subtracted from the height.

Volume and Capacity

The external volume calculates the total space the box occupies. The internal volume is the capacity of the box (how much it can hold).

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Density and Mass Relation

Mass = Volume × Density. Always ensure consistent units before performing multiplication. For instance, if density is given in grams per cm^3, volume must be in cm^3 before calculating the final mass.

Q50. Answer: (d) Rs. 70,200

Shortcut Trick

M's profit = (4064 + 508) ÷ 2 = Rs. 2286, N's profit = 4064 − 2286 = Rs. 1778

Profit ratio M : N = 2286 : 1778 = 9 : 7

Let N's capital be C => (C + 39000) × 4 : (C × 7) = 9 : 7

=> 4C + 156000 = 9C => 5C = 156000 => C = Rs. 31200

M's capital = 31200 + 39000 = Rs. 70200

Therefore The correct answer is Rs. 70,200.

Alternate Method

Given:

Total Profit = Rs. 4064

Difference in Profit (M − N) = Rs. 508

Time for M = 4 months, Time for N = 7 months

Let N's capital be x, then M's capital is x + 39000.

Formula Used:

Profit Ratio = (Capital1 × Time1) : (Capital2 × Time2)

Partner M

Capital: x + 39000

Time: 4 months

Profit: Rs. 2286

Partner N

Capital: x

Time: 7 months

Profit: Rs. 1778

:

Profit Ratio prop. to (Capital × Time)

Calculations:

=> M's profit = (Total Profit + Difference) ÷ 2

=> M's profit = (4064 + 508) ÷ 2 = Rs. 2286

=> N's profit = Total Profit − M's Profit = 4064 − 2286 = Rs. 1778

=> Ratio of Profit (M : N) = 2286 : 1778

Dividing both sides by 254 (or simplifying progressively):

=> Ratio of Profit = 9 : 7

=> [(x + 39000) × 4] / (x × 7) = 9 / 7

=> 4x + 156000 = 9x

=> 5x = 156000

=> x = 31200

=> M's capital = x + 39000 = 31200 + 39000 = 70200

Therefore The correct answer is Rs. 70,200.

Additional Information

Partnership Profit Concept

When investments are made for different time periods, the profit is distributed in the ratio of the product of their capital and time. (P1 : P2 = C1×T1 : C2×T2)

Sleeping vs Working Partner

A working partner receives a fixed salary or a certain percentage of the profit for managing the business, and the remaining profit is distributed among all partners in the ratio of their investments.

Addition / Withdrawal of Capital

If a partner changes their capital mid-way, their total effective capital is calculated by multiplying each capital amount by the

number of months it was invested and summing them up.

Q51. Answer: (d) Rs. 4,275

Shortcut Trick

Successive discounts can be calculated directly using the multiplying factor method.

Selling Price = Marked Price × (100 − D1)% × (100 − D2)%

SP = 5000 × 0.90 × 0.95

SP = 4500 × 0.95 = 4275

Therefore The correct answer is Rs. 4,275.

Alternate Method

Given:

Marked Price (MP) = Rs. 5,000

First Discount (D1) = 10%

Second Discount (D2) = 5%

Formula Used:

Selling Price (SP) = MP × [(100 − D1) ÷ 100] × [(100 − D2) ÷ 100]

-10%

-5%

Rs. 5,000

Marked Price

Rs. 4,500

After 1st Disc.

Rs. 4,275

Final SP

Calculations:

=> SP = 5000 × [(100 − 10) ÷ 100] × [(100 − 5) ÷ 100]

=> SP = 5000 × (90 ÷ 100) × (95 ÷ 100)

=> SP = 5000 × 0.90 × 0.95

=> SP = 4500 × 0.95

=> SP = 4275

Therefore The correct answer is Rs. 4,275.

Additional Information

Effective Discount Formula

For two successive discounts of x% and y%, the single equivalent overall discount can be found using the formula: D = x + y − (x × y) ÷ 100.

Marked Price (MP)

It is the list price or tag price printed on an article. All discount percentages are calculated on the Marked Price only.

Successive Discounts

When discounts are offered one after another, each successive discount is applied to the newly updated price after subtracting the previous discount, not to the original marked price.

Q52. Answer: (b) 6%

Shortcut Trick

Ratio of Males to Females = 165000 : (374000 − 165000) = 165 : 209 = 15 : 19.

Using the weighted average method for overall percentage:

Overall Literacy % = [(Male Ratio × Male %) + (Female Ratio × Female %)] ÷ Total Ratio

21 = [(15 × 40) + (19 × x)] ÷ 34

714 = 600 + 19x => 19x = 114 => x = 6

Therefore The correct answer is 6%.

Alternate Method

Given:

Total population = 374000

Number of males = 165000

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Overall literacy rate = 21%

Male literacy rate = 40%

Formula Used:

Percentage = (Part value ÷ Total value) × 100

Male

Female

Overall

40%

x%

21%

21 − x

19

Ratio = 15

Ratio = 19

Calculations:

=> Number of females = Total population − Number of males

=> Number of females = 374000 − 165000 = 209000

=> Total literate population = (21 ÷ 100) × 374000 = 78540

=> Total literate males = (40 ÷ 100) × 165000 = 66000

=> Literate females = Total literate population − Total literate males

=> Literate females = 78540 − 66000 = 12540

=> Percentage of literate females = (12540 ÷ 209000) × 100

=> Percentage of literate females = (1254000 ÷ 209000) = 6%

Therefore The correct answer is 6%.

Additional Information

Weighted Average

When a group is divided into multiple components, the overall average is derived using: A_w = (n1x1 + n2x2) ÷ (n1 + n2), where n is the number of elements or ratio parts and x is the component average.

Rule of Alligation

It establishes the ratio in which two components are mixed to get a mixture of a specific average. The fundamental equation is: Ratio = (Dearer − Mean) : (Mean − Cheaper).

Base of Percentage

Percentages must always be calculated against their true specific base values. For instance, the male literacy rate is strictly calculated on the total male population, not the overall district population.

Q53. Answer: (d) 96 minutes

Shortcut Trick

Total capacity of cistern = LCM of 16, 32, and 12 = 96 units.

Efficiency of Pipe 1 = 96 ÷ 16 = +6 units/min

Efficiency of Pipe 2 = 96 ÷ 32 = +3 units/min

Combined efficiency (Pipe 1 + 2 + Emptying Pipe) = 96 ÷ 12 = +8 units/min

Efficiency of Emptying Pipe = 8 − (6 + 3) = −1 unit/min.

Therefore The correct answer is 96 minutes.

Alternate Method

Given:

Time taken by Pipe A to fill the cistern = 16 minutes

Time taken by Pipe B to fill the cistern = 32 minutes

Time taken by Pipes A, B, and C together to fill the cistern = 12 minutes

Pipe	Time (mins)	Total Work	Efficiency
Pipe A	16	96	+6
Pipe B	32	+3	

A + B + C	12	+8	

Calculations:

=> Combined Efficiency of filling pipes A and B = 6 + 3 = 9 units/min

=> Total Combined Efficiency of A, B, and C = 8 units/min

=> Efficiency of Pipe C (Emptying Pipe) = (A + B + C) − (A + B)

=> Efficiency of Pipe C = 8 − 9 = −1 unit/min

The negative sign indicates that Pipe C is emptying the cistern at a rate of 1 unit per minute.

=> Time taken by Pipe C to empty the completely filled cistern = Total Work ÷ Efficiency of C

=> Time taken = 96 ÷ 1 = 96 minutes

Therefore The correct answer is 96 minutes.

Additional Information

Pipes & Cisterns Concept

If a pipe can fill a tank in x hours, its efficiency is +1/x per hour. If another pipe can empty the tank in y hours, its efficiency is −1/y per hour.

LCM Method for Total Work

Taking the Total Capacity as the Least Common Multiple (LCM) of all the individual time periods simplifies calculations by providing integer efficiency values rather than complex fractions.

Combined Efficiency Rule

When multiple pipes operate simultaneously, their net efficiency is the algebraic sum of their individual efficiencies (adding the filling rates and subtracting the emptying rates).

Q54. Answer: (a) 70

Shortcut Trick

The mean proportional between two numbers a and b is given by √(a × b).

Here, the given numbers are 490 and 10.

=> Mean proportional = √(490 × 10)

=> Mean proportional = √4900 = 70

Therefore The correct answer is 70.

Alternate Method

Given:

First number = 490

Second number = 10

Formula Used:

If x is the mean proportional between a and b, then a : x :: x : b => $x^2 = a \times b$.

Proportion Formula: a : x :: x : b

490

:

x

::

x

:

10

Mean Proportional (x)

Calculations:

=> Let the mean proportional be x.

=> 490 ÷ x = x ÷ 10

=> $x^2 = 490 \times 10$

=> $x^2 = 4900$

=> x = √4900

=> x = 70

Therefore The correct answer is 70.

Additional Information

Mean Proportional

For two numbers a and b, the mean proportional x satisfies a : x :: x : b, giving x = √(a × b).

Third Proportional

For two numbers a and b, the third proportional c satisfies a : b :: b : c, giving c = b^2 ÷ a.

Fourth Proportional

For three numbers a, b, and c, the fourth proportional d satisfies a : b :: c : d, giving d = (b × c) ÷ a.

Q55. Answer: (c) 77

Shortcut Trick

Apply the BODMAS rule to directly solve the expression step by step.

First, solve the inner bracket: (5 − 7) = −2

Second, perform the multiplication: 9 × (−2) = −18

Third, solve the curly bracket: {26 − 18} = 8

Finally, divide the outside number by the bracket result: 616 ÷ 8 = 77

Therefore The correct answer is 77.

Alternate Method

Given:

Expression: [616 ÷ {26 + 9 × (5 − 7)}]

Formula Used:

BODMAS Rule (Brackets, Orders, Division, Multiplication, Addition, Subtraction).

Calculation:

=> 616 ÷ {26 + 9 × (5 − 7)}

=> 616 ÷ {26 + 9 × (−2)}

=> 616 ÷ {26 − 18}

=> 616 ÷ 8

=> 77

Therefore The correct answer is 77.

Additional Information

BODMAS Rule

It specifies the exact sequence for mathematical operations: Brackets, Orders (powers/roots), Division, Multiplication, Addition, and Subtraction. Operations must be evaluated strictly in this hierarchy.

Order of Brackets

When multiple brackets are present, solve them from the innermost to the outermost in this specific order: Vinculum (line bracket), Round brackets (), Curly brackets { }, and finally Square brackets [].

Sign Rules for Multiplication

When multiplying numbers with different signs, remember: (+) × (-) = (-) and (-) × (-) = (+). Proper sign tracking is crucial during bracket simplification.

Q56. Answer: (d) 51.6

Shortcut Trick

Let the assumed average be 50 kg.

Deviations from 50: (40 − 50) = −10, (49 − 50) = −1, (56 − 50) = +6, (74 − 50) = +24, (39 − 50) = −11.

Net deviation = −10 − 1 + 6 + 24 − 11 = +8

Average deviation = 8 ÷ 5 = +1.6 kg

Actual Average = Assumed Average + Average Deviation = 50 + 1.6 = 51.6 kg.

Therefore The correct answer is 51.6 kg.

Alternate Method

Given:

Weights of family members = 40 kg, 49 kg, 56 kg, 74 kg, and 39 kg

Total number of members = 5

40

49

56

74

39

Average = 51.6

Weights of Family Members (in kg)

Formula Used:

Average = (Sum of all observations) ÷ (Total number of observations)

Calculations:

=> Sum of weights = 40 + 49 + 56 + 74 + 39

=> Sum of weights = 258 kg

=> Average = 258 ÷ 5

=> Average = 51.6 kg

Therefore The correct answer is 51.6 kg.

Additional Information

Weighted Average

When two or more groups have different averages, their combined average is calculated as: Combined Average = (n1A1 + n2A2) ÷ (n1 + n2)

Deviation Method

It simplifies average calculations by choosing an assumed mean (A). The actual average = A + (Sum of deviations ÷ Total items).

Effect of Arithmetic Operations

If a constant value is added, subtracted, multiplied or divided to each given observation, the new average will similarly undergo the exact same arithmetic operation with that constant.

Q57. Answer: (d) Rs. 814

Shortcut Trick

When the investment period is identical, profit is distributed in the ratio of the investments.

Profit Ratio of A : B : C = 1340 : 1100 : 2440 = 67 : 55 : 122

B's share = 55 units = Rs. 814

Difference in profit of C and A = 122 units − 67 units = 55 units.

Since the difference is exactly equal to B's share (55 units), the value is the same.

Therefore The correct answer is Rs. 814.

Alternate Method

Given:

Investment of A = Rs. 1340

Investment of B = Rs. 1100

Investment of C = Rs. 2440

B's share in profit = Rs. 814

Formula Used:

Profit Ratio = Investment × Time

When time is constant for all partners, Profit Ratio = Investment Ratio

Rs. 1340

67x

A

Rs. 1100

55x

B

Rs. 2440

122x

C

Profit Ratio = Investment Ratio

Calculations:

=> Profit ratio of A : B : C = 1340 : 1100 : 2440

=> Simplifying the ratio by dividing by 20, we get A : B : C = 67 : 55 : 122

=> Let the profits of A, B and C be 67x, 55x and 122x respectively.

=> B's profit = 55x = 814

=> x = 814 ÷ 55 = 14.8

=> Difference in profit of C and A = 122x − 67x = 55x

=> Difference = 55 × 14.8 = 814

Therefore The correct answer is Rs. 814.

Additional Information

Simple Partnership

When all partners invest their capital for the exact same time period, it is termed a simple partnership. The overall profit or loss is distributed purely in the ratio of their original investments.

Compound Partnership

When partners invest for varying time periods, it is a compound partnership. The profit or loss is shared in the ratio of the product of their capital and time period (C1 × T1 : C2 × T2).

Working vs Sleeping Partner

A working partner manages the business and usually receives a fixed salary or a specific percentage of the profit for their services, in addition to their investment share. A sleeping partner contributes only capital.

Q58. Answer: (b) 60, 24

Shortcut Trick

The fastest way to solve this is by verifying the given options against the conditions.

Check the pair (60, 24): Their sum is 60 + 24 = 84, matching the first condition.

The larger number is 60. Its multiples are 60, 120... and 120 is fully divisible by 24 (24 × 5 = 120).

Thus, the L.C.M. of 60 and 24 is exactly 120, satisfying the second condition perfectly.

Therefore The correct answer is 60, 24.

Alternate Method

Given:

Sum of two numbers = 84

L.C.M. of the two numbers = 120

Formula Used:

Let the H.C.F. of the numbers be H.

The numbers can be written as H × a and H × b, where a and b are coprime.

Sum = H(a + b)

L.C.M. = H × a × b

Number 1 = 60

Number 2 = 24

Sum = 84

L.C.M. (60, 24) = 120

Calculation:

=> Ratio of L.C.M. to Sum = 120 ÷ 84 = 10 ÷ 7

=> (H × a × b) ÷ H(a + b) = 10 ÷ 7

=> (a × b) ÷ (a + b) = 10 ÷ 7

=> By observation, the coprime numbers are a = 5 and b = 2 (since 5 × 2 = 10 and 5 + 2 = 7).

=> Substitute a and b back into the sum equation: H(5 + 2) = 84

=> H × 7 = 84

=> H = 12

=> First number = H × a = 12 × 5 = 60

=> Second number = H × b = 12 × 2 = 24

Therefore The correct answer is 60, 24.

Additional Information

Product of Two Numbers

For any two positive numbers, the product of the numbers is strictly equal to the product of their H.C.F. and L.C.M. (i.e., a × b = H.C.F. × L.C.M.).

Coprime Numbers

Two numbers are said to be coprime if their highest common factor (H.C.F.) is 1. When deducing numbers from an L.C.M. and sum ratio, the internal multipliers must be mutually coprime.

Relationship with H.C.F.

The H.C.F. of two numbers is their greatest dividing base, and it will always exactly divide their sum, their difference, and their overall L.C.M.

Q59. Answer: (b) 5.1

Shortcut Trick

Convert the given decimals to fractions in their simplest form: 5.1 = 51/10 and 0.102 = 102/1000 = 51/500.

Use the formula: LCM of fractions = LCM of Numerators ÷ HCF of Denominators.

LCM of Numerators (51, 51) = 51.

HCF of Denominators (10, 500) = 10.

Required LCM = 51 ÷ 10 = 5.1

Therefore The correct answer is 5.1.

Alternate Method

Given:

The numbers are 5.1 and 0.102.

Method Used:

Equating decimal places method to find the LCM of decimals.

Calculations:

=> Add trailing zeros to equate the number of decimal places to three places: 5.100 and 0.102.

=> Ignore the decimal points and treat them as whole numbers: 5100 and 102.

=> Now, find the LCM of 5100 and 102.

=> Since 5100 is perfectly divisible by 102 (as 102 × 50 = 5100), the LCM of 5100 and 102 is 5100.

=> Place the decimal point back 3 places from the right (as per the equated decimal form).

=> Resulting LCM = 5.100 = 5.1

Therefore The correct answer is 5.1.

Additional Information

LCM of Fractions

LCM of fractions = LCM of numerators ÷ HCF of denominators. Fractions must always be reduced to their simplest irreducible form before applying this rule.

HCF of Fractions

HCF of fractions = HCF of numerators ÷ LCM of denominators. Similar to LCM, fractions must be in their simplest form.

LCM of Decimals Method

Always equate the number of decimal places by adding trailing zeros before removing the decimal points. Directly removing the decimals without matching their lengths will lead to an incorrect LCM.

Q60. Answer: (c) Rs. 1,46,420

Shortcut Trick

Effective SI% in Case 1 = 2.5% × (21/5) = 10.5%

Given, 10.5% of Principal = Rs. 8,400 => 1% = Rs. 800 => Principal = Rs. 80,000

Effective SI% in Case 2 = 8.1% × (41/4) = 83.025%

Amount% in Case 2 = 100% + 83.025% = 183.025%

Total Amount = 183.025% of Rs. 80,000 = 183.025 × 800 = Rs. 1,46,420

Therefore The correct answer is Rs. 1,46,420.

Alternate Method

Given:

=> Simple Interest (SI1) for 4(1/5) years at 2.5% per annum = Rs. 8,400

=> Time for Case 2 (T2) = 10(1/4) years, Rate (R2) = 8.1%

Formula Used:

=> SI = (P × R × T) ÷ 100

=> Amount (A) = P + SI

Principal (P) = ?
R = 2.5%, T = 4.2 yr
SI = Rs. 8,400
R = 8.1%, T = 10.25 yr
Amount = ?
P = Rs. 80,000
Calculations:
=> Let the principal sum be P.
=> In the first case: T1 = 21/5 years, R1 = 2.5%
=> SI1 = (P × 2.5 × 21/5) ÷ 100
=> 8400 = (P × 10.5) ÷ 100
=> P = (8400 × 100) ÷ 10.5 = Rs. 80,000
=> In the second case: T2 = 41/4 years = 10.25 years, R2 = 8.1%
=> SI2 = (80000 × 8.1 × 10.25) ÷ 100
=> SI2 = 800 × 8.1 × 10.25
=> SI2 = 6480 × 10.25 = Rs. 66,420
=> Amount = P + SI2 = 80000 + 66420 = Rs. 1,46,420
Therefore The correct answer is Rs. 1,46,420.
Additional Information
Simple vs Compound Interest
Simple Interest is calculated only on the principal amount, while Compound Interest is calculated on the principal and the accumulated interest of previous periods.
Difference between CI and SI (2 Years)
The difference between CI and SI for 2 years at a rate of R% per annum is given by $D = P(R/100)^2$.
Difference between CI and SI (3 Years)
The difference for 3 years is given by $D = P(R/100)^2 \times (3 + R/100)$.

Q61. Answer: (a) 23604

Shortcut Trick
Since the ratio parts (3, 5, 7) are in arithmetic progression, their average is exactly the middle part: 5 units.
=> 5 units = Rs. 16860
=> 1 unit = 16860 ÷ 5 = 3372
=> Costliest item (7 units) = 3372 × 7 = 23604
Therefore The correct answer is Rs. 23604.
Alternate Method
Given:
Average price of 3 items = Rs. 16860
Ratio of their prices = 3 : 5 : 7
Formula Used:
Sum of observations = Average × Number of observations
3x
5x
7x (Costliest)
Total = 15x = 3 × 16860 = 50580
Average = 5x = Rs. 16860
1x = 3372 → 7x = 23604
Calculations:
=> Let the individual prices of the items be 3x, 5x, and 7x.
=> Total price of 3 items = Average × 3
=> Total price = 16860 × 3 = Rs. 50580
=> Sum of all ratios = 3x + 5x + 7x = 15x
=> Equating the total price with the sum of ratio parts:

=> 15x = 50580

=> x = 50580 ÷ 15

=> x = 3372

=> The costliest item represents the highest ratio part, which is 7x.

=> Price of the costliest item = 7 × 3372 = 23604

Therefore The correct answer is Rs. 23604.

Additional Information

Average Concept

The average of a set of numbers is the sum of the numbers divided by the total count of numbers. Formula: Average = Sum of observations ÷ Total number of observations.

Arithmetic Progression (AP) Rule

When terms are arranged with a constant difference (like 3, 5, 7), they are in AP. For any set of odd number of terms in an AP, their average is always exactly equal to the middle term.

Ratio and Proportion

A ratio compares different quantities. If a combined sum is divided among variables in the ratio a:b:c, the exact value of the share 'a' can be calculated using the relation: Total × [a ÷ (a + b + c)].

Q62. Answer: (a) 236

Shortcut Trick

Cost Price (CP) of 1 eraser = 150 ÷ 12 = Rs. 12.5

Selling Price (SP) of 1 eraser = Rs. 42

Profit % = [(SP − CP) ÷ CP] × 100

Profit % = [(42 − 12.5) ÷ 12.5] × 100

Profit % = (29.5 ÷ 12.5) × 100 = 236%

Therefore The correct answer is 236%.

Alternate Method

Given:

Cost Price (CP) of 1 dozen (12 erasers) = Rs. 150

Selling Price (SP) of 1 eraser = Rs. 42

Formula Used:

Profit = Selling Price (SP) − Cost Price (CP)

Profit % = (Profit ÷ CP) × 100

CP = Rs. 150

(1 Dozen)

SP = Rs. 504

(12 × Rs. 42)

Profit = Rs. 354

Profit % = 236%

Calculations:

=> Total Cost Price (CP) for 12 erasers = Rs. 150

=> Total Selling Price (SP) for 12 erasers = 12 × 42 = Rs. 504

=> Profit = Total SP − Total CP

=> Profit = 504 − 150 = Rs. 354

=> Profit % = (354 ÷ 150) × 100

=> Profit % = (354 ÷ 3) × 2

=> Profit % = 118 × 2 = 236%

Therefore The correct answer is 236%.

Additional Information

Marked Price & Discount

Discount is always calculated on the Marked Price (MP). Selling Price (SP) = MP − Discount.

Successive Discount

If two successive discounts of a% and b% are given on an item, the equivalent single discount is given by the formula: Equivalent

Discount % = (a + b − ab ÷ 100)%.

Dishonest Dealer

If a dealer claims to sell his goods at the cost price but uses a false weight, his Profit % = (Error ÷ True Value − Error) × 100.

Q63. Answer: (a) 79 cm²

Shortcut Trick

Find the semi-perimeter (s) = (11 + 15 + 16) ÷ 2 = 21 cm.

Apply Heron's formula directly: Area = √[21 × (21 − 11) × (21 − 15) × (21 − 16)].

Area = √(21 × 10 × 6 × 5) = √6300.

Since 79² = 6241 and 80² = 6400, √6300 is closest to 79.

Therefore The correct answer is 79 cm².

Alternate Method

Given:

Sides of the triangle, a = 11 cm, b = 15 cm, c = 16 cm.

Formula Used:

Heron's Formula: Area = √[s(s − a)(s − b)(s − c)]

Semi-perimeter (s) = (a + b + c) ÷ 2

15 cm

11 cm

16 cm

Area = ?

Calculations:

=> s = (11 + 15 + 16) ÷ 2

=> s = 42 ÷ 2 = 21 cm

=> s − a = 21 − 11 = 10 cm

=> s − b = 21 − 15 = 6 cm

=> s − c = 21 − 16 = 5 cm

=> Area = √(21 × 10 × 6 × 5)

=> Area = √(6300)

=> Area = √(900 × 7) = 30√7

=> Since √7 ≈ 2.645, Area ≈ 30 × 2.645 = 79.35 cm²

=> Rounding off to the nearest integer, we get 79 cm²

Therefore The correct answer is 79 cm².

Additional Information

Heron's Formula

Used to find the area of a scalene triangle when all three sides are known: Area = √[s(s − a)(s − b)(s − c)].

Inradius (r) of a Triangle

The radius of the inscribed circle that touches all three sides can be calculated as r = Area ÷ s.

Circumradius (R) of a Triangle

The radius of the circumscribed circle passing through all vertices can be calculated as R = (a × b × c) ÷ (4 × Area).

Q64. Answer: (b) 2 km/hr

Shortcut Trick

When Pranay's speed is doubled (ratio 1 : 2), his time is halved (ratio 2 : 1).

Total reduction in Pranay's time = 6 hours (more) + 9 hours (less) = 15 hours.

Difference in time ratio = 2 parts − 1 part = 1 part.

=> 1 part = 15 hours => Original time (2 parts) = 30 hours.

=> Pranay's original speed = Distance ÷ Time = 60 ÷ 30 = 2 km/hr.

Therefore The correct answer is 2 km/hr.

Alternate Method

Given:

Total distance = 60 km

Formula Used:

Time = Distance ÷ Speed

Aman's Time

Original Time

New Time

• 6 hrs

− 9 hrs

Total Difference = 15 hrs

Pranay's Time Line

Calculations:

Let Pranay's original speed be P km/hr and Aman's speed be A km/hr.

=> From the first condition: (60 ÷ P) − (60 ÷ A) = 6

=> From the second condition: (60 ÷ A) − [60 ÷ (2 × P)] = 9

=> Adding both equations, we eliminate A:

=> (60 ÷ P) − (60 ÷ 2P) = 6 + 9

=> (60 ÷ P) − (30 ÷ P) = 15

=> 30 ÷ P = 15

=> P = 30 ÷ 15 = 2 km/hr

Therefore The correct answer is 2 km/hr.

Additional Information

Relative Speed

When two bodies move in the same direction, their relative speed is the difference of their individual speeds (V1 − V2).

Average Speed

For different speeds over equal distances, Average Speed = (2 × S1 × S2) ÷ (S1 + S2).

Speed and Time Inverse Relation

For a constant distance, Speed is inversely proportional to Time. If the ratio of speeds is a : b, then the ratio of times taken will be b : a.

Q65. Answer: (c) 29.75

Shortcut Trick

For faster mental calculation, split 65% into 50% + 10% + 5%:

65% of 55 = 27.5 + 5.5 + 2.75 = 35.75

Fraction calculation directly solves to:

2/5 of 15 = 2 × 3 = 6

Difference = 35.75 − 6 = 29.75

Therefore The correct answer is 29.75.

Alternate Method

Given:

First expression = 65% of 55

Second expression = 2/5 of 15

Calculations:

=> First expression = (65 / 100) × 55

=> 65% of 55 = 3575 / 100 = 35.75

=> Second expression = (2 / 5) × 15

=> 2/5 of 15 = 2 × 3 = 6

=> Required difference = First expression − Second expression

=> Required difference = 35.75 − 6 = 29.75

Therefore The correct answer is 29.75.

Additional Information

Percentage to Fraction Conversion

Any percentage x% can be converted to a fraction by dividing by 100 (x/100). This helps in simplifying equations where fractional equivalent is easier to calculate.

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BODMAS Rule

In mathematical expressions, 'Of' translates to multiplication and is solved before standard division or multiplication based on the BODMAS sequence order.

Mental Math for Percentages

To find 5% of a number quickly, first calculate 10% by shifting the decimal point one place to the left, and then simply halve that result.

Q66. Answer: (d) 6

Shortcut Trick

5 years ago, the father's age was 11 years more than twice his son's age (Difference = 11).

Every year, the father's age increases by 1, while twice the son's age increases by 2.

Thus, the gap between the father's age and twice the son's age decreases by 1 each year.

To reduce this gap from 11 to 0 (where Father = 2 × Son), it will take exactly 11 years.

Since 5 years have already passed from that point, the remaining time = 11 − 5 = 6 years.

Therefore The correct answer is 6 years.

Alternate Method

Given:

5 years ago, the age of a father was 11 years more than twice his son's age.

Formula Used:

If the present age is A, age 't' years ago = A − t, and age after 't' years = A + t.

5 Years Ago

F - 5 = 2(S - 5) + 11

Present Age

F = 2S + 6

After x Years

F + x = 2(S + x)

• 5 Years

• x Years

Calculations:

=> Let the present age of the father be F and the son be S.

=> Father's age 5 years ago = F − 5

=> Son's age 5 years ago = S − 5

=> According to the problem: F − 5 = 2 × (S − 5) + 11

=> F − 5 = 2S − 10 + 11

=> F − 5 = 2S + 1

=> F − 2S = 6 ... (Equation 1)

=> Let after 'x' years, the father's age be twice the son's age.

=> Father's age after x years = F + x

=> Son's age after x years = S + x

=> According to the condition: F + x = 2 × (S + x)

=> F + x = 2S + 2x

=> x = F − 2S

=> From Equation 1, substitute the value of (F − 2S):

=> x = 6

Therefore The correct answer is 6 years.

Additional Information

Linear Equations in Ages

When solving age-related problems, we assign variables (like x, y) to present ages and form linear equations based on the given past or future conditions.

Time Shifting (Past & Future Ages)

If the present age is P, then the age 'n' years ago is (P − n) and the age 'n' years in the future will be (P + n). The age difference between two individuals always remains constant over time.

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Ratio of Ages

When the ratio of ages of two persons is a : b, their ages can be assumed as ax and bx. If their age ratio after 't' years changes to c : d, then (ax + t) ÷ (bx + t) = c ÷ d.

Q67. Answer: (d) Rs. 192

Shortcut Trick

Total interest rate for 4 months = 4% × 4 = 16%

Simple Interest = 16% of Principal

=> SI = (16 ÷ 100) × 1200

=> SI = 192

Therefore The correct answer is Rs. 192.

Alternate Method

Given:

Principal (P) = Rs. 1,200

Rate of Interest (R) = 4% per month

Time (T) = 4 months

Formula Used:

Simple Interest (SI) = (P × R × T) ÷ 100

Simple Interest Timeline

Month 0

Rs. 1200

Month 1

Month 2

Month 3

Month 4

Rs. 1392

+Rs. 48

+Rs. 48

+Rs. 48

+Rs. 48

Total Simple Interest = 4 × Rs. 48 = Rs. 192

Calculations:

Since both Rate and Time are natively given in months, we apply the formula directly without any yearly conversion:

=> SI = (1200 × 4 × 4) ÷ 100

=> SI = 12 × 16

=> SI = 192

Therefore The correct answer is Rs. 192.

Additional Information

Unit Consistency in Simple Interest

The unit of time (T) must always match the time period of the rate of interest (R). If R is annual, T must be in years. If R is monthly, T must be in months.

Simple Interest vs Compound Interest

Simple Interest is calculated solely on the original principal. Compound Interest is calculated on the principal plus any accumulated interest from prior periods.

Total Amount Formula

The total amount (A) paid at the end of the term is the sum of the Principal and the Simple Interest. Formula: A = P + SI = P × (1 + RT/100).

Q68. Answer: (b) 25

Shortcut Trick

The product of two consecutive numbers x and (x + 1) is approximately x^2.

We know the perfect squares $24^2 = 576$ and $25^2 = 625$.

Since 600 lies strictly between 576 and 625, the smaller number must be 24.

Checking the product: 24 × 25 = 600.
Thus, the greater number of the two is 25.
Therefore The correct answer is 25.
Alternate Method
Given:
The product of two consecutive natural numbers = 600
Formula Used:
For two consecutive natural numbers, if the smaller number is x, the larger number is (x + 1).
Calculations:
=> $x \times (x + 1) = 600$
=> $x^2 + x = 600$
=> $x^2 + x - 600 = 0$
=> $x^2 + 25x - 24x - 600 = 0$
=> $x(x + 25) - 24(x + 25) = 0$
=> $(x - 24)(x + 25) = 0$
=> $x = 24$ or $x = -25$
=> Since x must be a natural number (positive integer), x = 24.
=> The greater number is (x + 1) = 24 + 1 = 25.
Therefore The correct answer is 25.
Additional Information
Consecutive Numbers
Numbers that follow each other continuously in the order from smallest to largest without any gaps. Example: n, n+1, n+2.
Natural Numbers
The set of positive integers starting from 1 (1, 2, 3, ...). They do not include zero, fractions, decimals, or negative numbers.
Quadratic Equations
An algebraic equation of the second degree in x: $ax^2 + bx + c = 0$. The roots can be found by splitting the middle term or using the formula $x = [-b \pm \sqrt{(b^2 - 4ac)}] \div 2a$.

Q69. Answer: (b) 1.24 km

Shortcut Trick
Speed in km/min = 24 ÷ 60 = 0.4 km/min
Distance = Speed × Time
Distance = 0.4 × 3.1 = 1.24 km
Therefore The correct answer is 1.24 km.
Alternate Method
Given:
Speed of the bicycle = 24 km/hr
Time taken to cross the bridge = 3.1 minutes
Formula Used:
Distance = Speed × Time
1 hour = 60 minutes
Bridge
Length = ?
Speed = 24 km/hr
Time = 3.1 min
Calculations:
=> First, convert the time from minutes to hours to match the speed unit.
=> Time = 3.1 ÷ 60 hours
=> Distance = Speed × Time
=> Distance = 24 × (3.1 ÷ 60)
=> Distance = (24 ÷ 60) × 3.1
=> Distance = 0.4 × 3.1

=> Distance = 1.24 km

Therefore The correct answer is 1.24 km.

Additional Information

Unit Conversions

To convert speed from km/hr to m/s, multiply by 5 ÷ 18. To convert from m/s to km/hr, multiply by 18 ÷ 5.

Average Speed

Average Speed = Total Distance Covered ÷ Total Time Taken.

Relative Speed

When two objects move in the same direction, relative speed = |S1 − S2|. When moving in opposite directions, relative speed = S1 + S2.

Q70. Answer: (b) 55/19 hours

Shortcut Trick

Total capacity of the tank = LCM of given hours (20, 25, 10) = 100 units

Combined efficiency of A, B and C = (100 ÷ 20) + (100 ÷ 25) + (100 ÷ 10) = 5 + 4 + 10 = 19 units/hour

Time taken to fill the tank together = Total Capacity ÷ Combined Efficiency = 100 ÷ 19 = 5^5/19 hours

Therefore The correct answer is 5^5/19 hours.

Alternate Method

Given:

Time taken by pipe A = 20 hours

Time taken by pipe B = 25 hours

Time taken by pipe C = 10 hours

Formula Used:

Total Capacity = LCM of individual times taken

Efficiency of a pipe = Total Capacity ÷ Time Taken

Calculations:

Pipe	Hours	Total Capacity	Efficiency
A	20	100 units	5
B	25	4	
C	10	10	

=> Total efficiency of pipes A, B, and C together = 5 + 4 + 10 = 19 units/hour

=> Time taken by all three pipes operating together = Total Capacity ÷ Total Efficiency

=> Time taken = 100 ÷ 19

=> Time taken = 5^5/19 hours

Therefore The correct answer is 5^5/19 hours.

Additional Information

Inlet vs Outlet Pipes

An inlet pipe fills the tank (positive work), while an outlet pipe empties it (negative work). If an inlet pipe fills in x hours and an outlet pipe empties in y hours, the net work in 1 hour is (1/x − 1/y).

Work and Wages

Wages are distributed in the ratio of the total work done by individuals. If individuals work for the same duration, wages are distributed exactly in the ratio of their efficiencies.

Alternate Working of Pipes

If two pipes operate in alternate hours, calculate the combined work done in a complete 2-hour cycle. Multiply this by complete cycles required to reach close to the total capacity, then add the remaining partial time taken by the next pipe in line.

Q71. Answer: (a) 33

Given : 72 × 3 − 8 ÷ 5 + 31 = ?

‘+’ and ‘−’ are interchanged, and ‘×’ and ‘÷’ are interchanged.

Here, we use the BODMAS table given below:

72 ÷ 3 + 8 × 5 - 31 = ?

24 + 8 × 5 - 31 = ?

24 + 40 - 31 = ?

33.

Hence, the correct answer is "Option 1"

Q72. Answer: (c) KFYU

The pattern followed here is

Hence, the correct answer is "Option 3"

Q73. Answer: (d) 6

Given number 8147563

1 is added to each odd digit and 2 is subtracted from each even digit

The sum of the digits that are second from the left and second from the right = 4 + 2 = 6.

Hence, the correct answer is "Option 4"

Q74. Answer: (d) QNVR

The pattern followed here is

Hence, the correct answer is "Option 4"

Q75. Answer: (b) 5

Seven boxes A, B, C, D, E, F and G are kept one over the other but not necessarily in the same order.

• D is kept immediately above A.

• G is kept immediately above B.

• Only E is kept above C.

• Only two boxes are kept above D.

• G is not kept at the third position from the bottom

The Final Arrangement is,

E
C
D
A
F
G
B

Hence, the correct answer is "Option 2"

Q76. Answer: (c) Father's brother

The family tree diagram is shown below:

Hence, the correct answer is "Option 3"

Q77. Answer: (d) North

• Town P is to the south of Town Q.

• Town R is to the west of Town Q.

• Town S is to the west of Town R.

• Town T is to the north of Town S and also to the south of Town U.

The Final Diagram,

Hence, the correct answer is "Option 4"

Q78. Answer: (b) YB−ZF

The pattern followed here is

Hence, the correct answer is "Option 2"

Q79. Answer: (a) 272, 166

The logic follows here,

Hence, the correct answer is "Option 1"

Q80. Answer: (d) 4

Given : 'LOAN' is coded as '4257' and 'NIKE' is coded as '1346'.

'LOAN' - '4257'

'NIKE' - '1346'.

Hence, the correct answer is "Option 4"

Q81. Answer: (a) 12

Given : (Left) 512 648 729 378 462 (Right)

The first digit of the lowest number = 378.

The third digit of the highest number = 729

9 + 3 = 12.

Hence, the correct answer is "Option 1"

Q82. Answer: (d) Two

I, J, K, L, O, P and Q are sitting around a circular table, facing the centre of the table.

• P sits third to the left of K.

• O sits second to the left of J.

• Only K sits between Q and O.

• L is not an immediate neighbour of P.

The Final Arrangement is,

Hence, the correct answer is "Option 4"

Q83. Answer: (c) 905

The logic follows here,

Hence, the correct answer is "Option 3"

Q84. Answer: (c) Two

Seven boxes P, Q, R, S, X, Y and Z are kept one over the other, but not necessarily in the same order.

• Z is kept second from the bottom.

• Only three boxes are kept between Z and R.

• X is kept at one of the positions below Z.

• Only S is kept between R and Y.

• P is kept at one of the positions above R

The Final Arrangement is,

P
R
S
Y
Q
Z
X

Hence, the correct answer is "Option 3 "

Q85. Answer: (d) 116

The logic follows here,

Hence, the correct answer is "Option 4"

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Q86. Answer: (c) ZTW

The pattern followed here is

Hence, the correct answer is "Option 3"

Q87. Answer: (c) fk

Given: learning is lifelong' is written as 'fk mb tb' and 'is school over' is coded as 'jt mt fk'

Hence, the correct answer is "Option 3"

Q88. Answer: (c) Four

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

• B sits third to the left of G.

• C sits second to the left of B.

• F sits to the immediate right of D.

• E sits to the immediate right of G

• The Final Arrangement is,

Hence, the correct answer is "Option 3"

Q89. Answer: (a) 90 km towards west

• Bimal starts from Point Y and drives 44 km towards south.

• He then takes a left turn, drives 56 km, turns right and drives 37 km.

• He then takes a right turn and drives 23 km.

• He takes a right turn, drives 28 km.

• He then turns right, drives 38 km, turns left and drives 53 km, turns right and drives 19 km to stop at Point Z.

The Final Diagram,

Hence, the correct answer is "Option 1"

Q90. Answer: (b) WPC

The pattern followed here is

Hence, the correct answer is "Option 2"

Q91. Answer: (c) VDQ 43

The pattern followed here is

Hence, the correct answer is "Option 3"

Q92. Answer: (c) Neither conclusion (I) nor (II) follows.

The least possible Venn diagram for the given statements is as shown below :

Conclusions:

(I) Some crafts are shawls. - False (As their is no direct relation between crafts and shawls, may be it is possible but not definite. Hence, it is false)

(II) All handlooms are shawls.- False (All shawls are handlooms. Some handlooms are shawls and some shawls are handlooms. Hence, it is false)

Neither conclusion (I) nor (II) follows.

Hence, the correct answer is "Option 3"

Q93. Answer: (a) 3

Given : (Left) 5 8 £ 1 7 & $ $ 7 # 4 1 8 9 @ 7 5 7 £ @ 2 & (Right)

Required Conditions: Number - Number - Number

(Left) 5 8 £ 1 7 & $ $ 7 # 4 1 8 9 @ 7 5 7 £ @ 2 & (Right)

418, 189, 757.

Hence, the correct answer is "Option 1"

Q94. Answer: (c) TXAI

The pattern followed here is

Hence, the correct answer is "Option 3"

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Q95. Answer: (b) 10

Given number 2516984

Arranged in the ascending order from left to right

1 2 4 5 6 8 9

Sum of the digits that are third from the left and third from the right in the new number

1 2 4 5 6 8 9

6 + 4 = 10.

Hence, the correct answer is "Option 2"

Q96. Answer: (c) SLOT - LOST - TOLS

The pattern followed here is

Hence, the correct answer is "Option 3"

Q97. Answer: (d) Neither conclusion (I) nor (II) follows.

The least possible Venn diagram for the given statements is as shown below :

Conclusions (I): No laptop is a mobile. - False (As their is no direct relation between laptop and mobile, may be it possible but not definite. Hence, it is false.)

Conclusions (II): Some laptops are mobile.- False (As their is no direct relation between laptop and mobile, may be it possible but not definite. Hence, it is false.)

Neither conclusion (I) nor (II) follows.

Hence, the correct answer is "Option 4"

Q98. Answer: (d) 246

The logic follows here,

Hence, the correct answer is "Option 4"

Q99. Answer: (d) 8

Given the number 5648321

Ascending order from left to right : 1234568

Sum of the digits that are second from the left and second from the right in the new number

1234568.

6 + 2 = 8.

Hence, the correct answer is "Option 4"

Q100. Answer: (c) 263

Rahul is sitting from the left end = 245^(th)

Rahul is sitting from the right end = 19^(th)

Total number of people in that row = (245 + 19) -1

= 263.

Hence, the correct answer is "Option 3"

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