RRB NTPC (UG) CBT-I Official Paper (Held On: 03 Sept, 2025 Shift 2) (Previous Year Paper)

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

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GENERAL AWARENESS

Q1. In May 2025, which venture capital firm launched a new investment vertical to support startups in India's defence and strategic technology sectors?

(a) Titan Capital
(b) Nexus Venture Partners
(c) Accel Partners
(d) Sequoia Capital

Q2. Which of the following states shares its boundary with Bangladesh?

(a) Nagaland
(b) Arunachal Pradesh
(c) Odisha
(d) Tripura

Q3. Which Indian state announced a Rs. 6,124 crore investment to boost road connectivity and infrastructure expansion in 2025?

(a) Uttar Pradesh
(b) Maharashtra
(c) Gujarat
(d) Tamil Nadu

Q4. Which among the following developed Bhargavastra, a multi-layered counter-drone system designed to neutralise drone threats, in May 2025?

(a) Bharat Electronics
(b) Solar Defence and Aerospace Limited
(c) Defence Research and Development Organisation
(d) Tata Advanced Systems

Q5. In May 2025, China announced visa-free access for all member states of which regional organisation?

(a) Association of Southeast Asian Nations (ASEAN)
(b) European Union (EU)
(c) Gulf Cooperation Council (GCC)
(d) South Asian Association for Regional Cooperation (SAARC)

Q6. In May 2025, the Indian Army held the 'Teesta Prahar' integrated field exercise in which state to demonstrate operational readiness and combined operational capabilities?

(a) Madhya Pradesh
(b) West Bengal
(c) Assam
(d) Rajasthan

Q7. The village headman during the Gupta period was commonly known as _____.

(a) Mahattara
(b) Uparika
(c) Amatyas
(d) Gramadhyaksha

Q8. What was the major demographic feature of India at the time of independence?

(a) High life expectancy
(b) High death rate and infant mortality
(c) Aging population
(d) Low birth rate

Q9. The seeds of which plant of the Fabaceae family are used as a spice, flavouring agent and food supplement?

(a) Dolichos oleifera lablab
(b) Trigonella foenum graecum
(c) Cajanus cajan
(d) Arachis hypogea

Q10. The First Backward Classes Commission was appointed in which year?

(a) 1967
(b) 1966
(c) 1953
(d) 1993

Q11. The Fiscal Responsibility and Budget Management (FRBM) Act set limits on the fiscal deficit and public debt. What was the fiscal deficit target under the original FRBM Act by 2008-09?

(a) 4.5% of GDP
(b) 5% of GDP
(c) 6% of GDP
(d) 3% of GDP

Q12. Which two researchers independently suggested that acid-base reactions could be thought of as proton-transfer reactions for the first time, in 1923?

(a) Guillaume F Rouelle and Humphry Davy
(b) Svante Arrhenius and Peter Waage
(c) Gilbert N Lewis and SPL Sorensen
(d) JN Brønsted and Thomas M Lowry

Q13. The 105th Constitutional Amendment Act, 2021, is related to which of the following?

(a) Creation of a National Judicial Commission
(b) GST reforms
(c) Powers of state governments to identify OBCs
(d) Women's reservation

Q14. The Ministry of Statistics and Programme Implementation (MoSPI) released which edition of its publication titled 'Women and Men in India 2024: Selected Indicators and Data' in April 2025?

(a) 20th
(b) 22nd
(c) 26th
(d) 30th

Q15. Who among the following Grammy-winning Indian musicians was awarded the Padma Shri in 2025?

(a) Shankar Mahadevan
(b) Ricky Kej
(c) Zakir Hussain

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(d) AR Rahman

Q16. Who among the following is the first African woman to assume office as the Commonwealth Secretary General in April 2025?

(a) Tansu Ciller
(b) Hanna Suchocka
(c) Sylvie Kinigi
(d) Shirley Botchwey

Q17. Which of the following Indian languages is spoken mainly in the state of Odisha?

(a) Punjabi
(b) Odia
(c) Marathi
(d) Kannada

Q18. Which of the following courts is known as the 'Guardian of the Constitution' in India?

(a) District Court
(b) High Court
(c) Supreme Court
(d) Lok Adalat

Q19. Transition elements are generally found in which block of the periodic table?

(a) s-block
(b) p-block
(c) d-block
(d) f-block

Q20. What does the abbreviation EBCDIC stand for?

(a) Encoded Binary Character Data Interchange Code
(b) Extended Binary Coded Decimal Interchange Code
(c) Extended Binary Code for Digital Information Communication
(d) Electronic Binary Code for Data Interchange Communication

Q21. The India Infrastructure Report 2023, released in December 2023 by Shri M Venkaiah Naidu, is related to _____.

(a) Forest Planning and Development
(b) Coastal Planning and Development
(c) Urban Planning and Development
(d) Rural Planning and Development

Q22. Which of the following was NOT a component of globalisation in India's economic reforms?

(a) Allowing foreign technology
(b) Promoting local-only trade
(c) Encouraging foreign direct investment
(d) Liberalising imports

Q23. Which of the following Indian players won two Olympic medals in a single edition of the Games in Paris 2025 and was awarded with Major Dhyan Chand Khel Ratna Award in January 2025?

(a) Swapnil Suresh Kusale
(b) Manu Bhaker
(c) Sarabjot Singh
(d) Sushil Bhaker

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Q24. Who among the following inaugurated seventh edition of the Khelo India Youth Games 2025 held at Bihar?

(a) Narendra Modi
(b) Arif Mohammad Khan
(c) Nitish Kumar
(d) Mansukh Mandaviya

Q25. In a State government, a minister holds office:

(a) for a fixed five-year term
(b) during the pleasure of the Governor
(c) as long as they enjoy the confidence of the State Legislative Council
(d) during the pleasure of the President

Q26. Which unit of the Indonesian Special Forces participated in Exercise GARUD SHAKTI, held in November 2024?

(a) Kostrad
(b) Marinir
(c) TNI-AU
(d) Kopassus

Q27. Which body is responsible for recruitment to All India Services like IAS and IPS?

(a) Election Commission
(b) Comptroller and Auditor General
(c) Finance Commission
(d) Union Public Service Commission

Q28. The Paris Agreement, adopted in 2015, aims to:

(a) limit global temperature rise
(b) halt desertification
(c) eliminate air pollution
(d) promote water conservation

Q29. Which of the following was NOT a kingdom based on the modern-day Tamil Nadu?

(a) Rashtrakutas
(b) Chola
(c) Chera
(d) Pandya

Q30. Slump is a type of:

(a) rock fall
(b) weathering
(c) erosion
(d) landslide

Q31. What was Gandhi’s view about the relation between means and ends in Satyagraha?

(a) Only ends matter, not the means.
(b) The ends justify the means.
(c) Violence is necessary for pure ends.
(d) Pure ends require pure means.

Q32. Where was the semicryogenic engine hot test held in April 2025?

(a) ISRO Propulsion Complex, Mahendra Giri
(b) Vikram Sarabhai Space Centre, Thiruvananthapuram
(c) Satish Dhawan Space Centre, Sriharikota
(d) Down Range Station, Port Blair

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Q33. When was the Mines Act enacted in India?

(a) 1962
(b) 1972
(c) 1982
(d) 1952

Q34. Which type of Indian cinema refers to commercial, mainstream films primarily produced in Hindi, known for their songs, drama and spectacle?

(a) Indie films
(b) Regional cinema
(c) Bollywood
(d) Parallel cinema

Q35. The infamous Jallianwala Bagh massacre occurred when Gandhi called all the Indians to observe April 6, 1919, as a day of non-violent protest against which of the following colonial policies?

(a) Partition of Bengal
(b) Rowlatt Act
(c) Simon Commission
(d) Minto-Morley reforms

Q36. What does the Constitution of India stipulate regarding the composition of the Election Commission of India (ECI)?

(a) It is constitutionally fixed as a single-member body headed by the Chief Election Commissioner (CEC) only.
(b) It must always be a three-member body (one Chief Election Commissioner and two Election Commissioners).
(c) It must include one Election Commissioner from each major state to ensure federal balance
(d) It may be single or multi-member; initially, there was only a Chief Election Commissioner until 1989.

Q37. What does the abbreviation ASCII stand for?

(a) Automated System Code for International Interfacing
(b) American Standard Code for Information Interchange
(c) Advanced Standard Communication for Information Integration
(d) American Standard Code for Internet Information

Q38. Which of the following Biosphere Reserves is located in Madhya Pradesh?

(a) Manas Biosphere Reserve
(b) Nanda Biosphere Reserve
(c) Similipal Biosphere Reserve
(d) Panna Biosphere Reserve

Q39. Which of the following leaders is associated with the concept of ‘Drain of Wealth’ theory?

(a) Subhash Chandra Bose
(b) MG Ranade
(c) Dadabhai Naoroji
(d) C Rajagopalachari

Q40. As per the Ministry of Ports, Shipping and Waterways of the Government of India, which port is known as the largest container port in India (as of May 2025)?

(a) Nhava Sheva
(b) Chennai
(c) Kandla
(d) Paradip

MATHEMATICS

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Q41. The population of a district is 376000, out of which 230000 are males. 11% of the population is literate. If 11% males are literate, then what percentage of females are literate?

(a) 12%
(b) 8%
(c) 9%
(d) 11%

Q42. Praveen and Hemant start a business. Praveen invests Rs. 16,000 more than Hemant for 7 months and Hemant invests for 6 months. Praveen's share is Rs. 1,007 more than that of Hemant, out of a total profit of Rs. 7,049. Find the capital contributed by Praveen.

(a) Rs. 1,28,142
(b) Rs. 1,27,842
(c) Rs. 1,28,112
(d) Rs. 1,28,000

Q43. The angle made by a point on the ground and the top of a building with ground is 30°. If the point is x units distance away from the bottom of the building, then the height of the building (in units) is:

(a) x/√2
(b) x/3
(c) x/2
(d) x/√3

Q44. Sapna invested Rs. 21,100 on simple interest, partly at the rate of 6% per annum and partly at the rate of 14% per annum. If she earns equal interests from the two investments after 3 years, then find the sum invested at the rate of 6% per annum (in Rs.).

(a) 14,768
(b) 14,773
(c) 14,770
(d) 14,767

Q45. The perimeter of an isosceles triangle is 184 cm. If the base is 44 cm, find the length of the equal sides (in cm).

(a) 72
(b) 75
(c) 78
(d) 70

Q46. If the interest earned during the 2nd year on a certain sum is Rs. 2,508, and the rate of interest is 20% per annum compounded annually, then the sum is:

(a) Rs. 9,695
(b) Rs. 10,315
(c) Rs. 10,450
(d) Rs. 10,005

Q47. Simplify: $x(3x - 9) + 3(x^2 - 2) + 14$

(a) $6x^2 - 9x + 8$
(b) -6x2 − 9x - 8
(c) -6x2 − 9x + 8
(d) 6x2 − 9x - 8

Q48. I bought two bicycles for Rs. 1,200. I sold the first one at a loss of 8% and the second at a gain of 17%. If, on the whole I made neither a loss nor a gain, find the cost price (in Rs.) of the first bicycle.

(a) 840
(b) 836
(c) 816
(d) 800

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Q49. The cost of 7 pens and 17 pencils is Rs. 92. If the cost of a pen decreases by Rs. 0.50 and the cost of a pencil increases by Rs. 8, then the cost of 8 pens and 14 pencils is Rs. 186. What is the original cost of 9 pens and 6 pencils?

(a) Rs. 35
(b) Rs. 43
(c) Rs. 41
(d) Rs. 39

Q50. In covering a distance of 110 km, Pranay takes 6 hours more than Aman. If Pranay doubles his speed, then he would take 5 hours less than Aman. Pranay's speed is:

(a) 6 km/hr
(b) 5 km/hr
(c) 11 km/hr
(d) 14 km/hr

Q51. An amount of Rs. 785 is divided among three persons in the ratio of 2 : 6 : 17. The difference between the largest and the smallest shares (in Rs.) in the distribution is

(a) 471
(b) 496
(c) 566
(d) 434

Q52. The sum of all interior angles of a regular polygon is 1620°. What is the measure (in degrees) of its each exterior angle?

(a) 328/11
(b) 318/11
(c) 338/11
(d) 348/11

Q53. The number 578289151 is divisible by which of the following?

(a) 11
(b) 6
(c) 4
(d) 10

Q54. If 2 times Mary’s present age is 16 years more than 3 times Diya's present age, and 2 times Diya's present age is 2 years less than Mary's present age, then what is the difference (in years) between the ages of Mary and Diya?

(a) 14
(b) 10
(c) 17
(d) 15

Q55. A book with a printed price of Rs. 4,500 is available on successive discounts of 10%, 20% and 25%. Find the selling price of the bank.

(a) Rs. 2,420
(b) Rs. 2,430
(c) R. 2,440
(d) Rs. 2,410

Q56. Evaluate: $(-9) - (-60) \div (-6) + (-3) \times 6$

(a) -36
(b) -39
(c) -37
(d) -40

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Q57. The LCM of the numbers 4.8 and 0.024 is:

(a) 0.048
(b) 4.8
(c) 0.48
(d) 48

Q58. The marks scored by 10 students are given below.

10, 19, 18, 18, 13, 14, 16, 18, 16, 12

The mode of the data is:

(a) 13
(b) 18
(c) 19
(d) 10

Q59. The H.C.F. and the L.C.M. of two numbers are 28 and 336, respectively. If one of the numbers is 112, find the other one.

(a) 140
(b) 84
(c) 112
(d) 56

Q60. The selling price of 25 books is equal to the cost price of 5 books. Find the loss or gain percentage.

(a) 100/20% gain
(b) 80% gain
(c) 100/20% loss
(d) 80% loss

Q61. Pipe A can fill a tank in 16 hours, pipe B can fill the same tank in 23 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) 10324/379 hours
(b) 1324/379 hours
(c) 13324/379 hours
(d) 4324/379 hours

Q62. Given that 134^(0.78) = x, 134^(0.52)= y and x^z = y^8, then the value of z is close to:

(a) 6.77
(b) 5.33
(c) 7.89
(d) 5.72

Q63. If the 6-digit number N51M91 is divisible by 11, then which of the options below can give a possible correct relation between M and N?

(a) M + N = -4
(b) M = N
(c) M - N = 1
(d) M - N = 4

Q64. Arjun and Malaika have to travel from Delhi to Kanpur in their respective cars. Arjun is driving at 60 km/hr while Malaika is driving at 96 km/hr. Find the time taken by Malaika to reach Kanpur if Arjun takes 8 hours.

(a) 5 hours
(b) 6 hours
(c) 9 hours
(d) 1 hours

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Q65. The average runs scored by a batsman in 23 matches is 40. In the next 10 matches, the batsman scored an average of 13 runs. Find his average runs scored (rounded off to two decimals) in all the 33 matches.

(a) 31.82
(b) 33.82
(c) 32.82
(d) 30.82

Q66. A cylindrical rod has an outer curved surface area of 7700 cm^2. If the length of the rod is 95 cm, then the outer radius (in cm) of the rod, correct to two places of decimal, is: (Take $\pi = 22/7$)

(a) 11.54
(b) 11.99
(c) 12.89
(d) 11.14

Q67. Shifa can do a certain piece of work in 28 days. Shifa and Afiya can together do the same work in 20 days, and Shifa, Afiya and Mariyam can do the same work together in 10 days. In how many days can Shifa and Mariyam do the same work together?

(a) 41/3
(b) 39/5
(c) 36/4
(d) 35/3

Q68. What single discount is equivalent to three successive discounts of 24%, 26% and 18%? (Rounded off to two decimal places)

(a) 53.88%
(b) 54.42%
(c) 54.94%
(d) 51.48%

Q69. By how much is 65% of 65 greater than 2/5 of 45?

(a) 22.25
(b) 24.25
(c) 18.25
(d) 21.25

Q70. Find the mean proportional between 28 and 252.

(a) 81
(b) 83
(c) 84
(d) 86

GENERAL INTELLIGENCE AND REASONING

Q71. Kiran starts from Point A and drives 5 km towards south. He then takes a left turn, drives 7 km, turns left and drives 8 km. He then takes a left turn and drives 9 km. He takes a final left turn, drives 3 km and stops at Point P. How far (shortest distance) and towards which direction should he drive in order to reach Point A again? (All turns are 90° turns only unless specified.)

(a) 4 km to east
(b) 2 km to east
(c) 3 km to east
(d) 1 km to east

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Q72. All 103 students in a class are standing in a row facing north. Farah is 39th from the right end while Kanak is 52nd from the left end. How many people stand between Farah and Kanak?

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

Q73. D is the wife of O. O is the brother of M. M is the father of E. E is the daughter of S. How is D related to S?

(a) Father's brother's mother
(b) Husband's brother's wife
(c) Father's brother's son
(d) Father's brother's daughter

Q74. 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.

APES - EAPS - SEPA

FROM - OFRM - MORF

(a) SANK - SNAK - KNAS
(b) RING - IRNG - GINR
(c) FIRM - RFIM - MRIF
(d) MEAL - AMEL - EALM

Q75. 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) XZD
(b) HJN
(c) EGL
(d) SUY

Q76. What should come in place of the question mark (?) in the given series based on the English alphabetical order?

RFG THI VJK XLM ?

(a) ZNO
(b) ZNP
(c) YNO
(d) ZMO

Q77. Each of the digits in the number 513946287 is arranged in ascending order from left to right. What will be the sum of the digits which are second from the left and third from the right in the new number thus formed?

(a) 11
(b) 13
(c) 9
(d) 5

Q78. Seven people A, B, C, D, E, F and G are sitting in a row, facing north. Only three people sit to the left of F. Only B sits to the right of D. Only three people sit between D and A. E sits at some place to the left of G but at some place to the right of C. How many people sit to the right of F?

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

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Q79. 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 is the letter-cluster pair that 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) WD-BK
(b) GN-LU
(c) FN-KT
(d) JQ-OX

Q80. If + means −, − means ×, × means ÷ and ÷ means +, then what will come in place of the question mark (?) in the following equation?

19 + 17 − 2 ÷ 84 × 3 = ?

(a) 32
(b) 24
(c) 18
(d) 13

Q81. In a certain code language, ‘MOST’ is coded as ‘2457’ and ‘BEAM’ is coded as ‘4136’. What is the code for ‘M’ in that language?

(a) 4
(b) 6
(c) 2
(d) 1

Q82. 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) NE-IL
(b) UL-PS
(c) PG-KM
(d) RI-MP

Q83. 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:

All bottles are hats.

No hat is a maize.

Conclusions:

(I): No bottle is a maize.

(II): Some maizes are hats.

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

Q84. What should come in place of the question mark (?) in the given series?

53 69 87 107 129 ?

(a) 163
(b) 158
(c) 168
(d) 153

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Q85. In a certain code language, ‘AMID’ is coded as ‘4257’ and ‘INKS’ is coded as ‘1346’. What is the code for ‘I’ in the given code language?

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

Q86. What should come in place of ? in the given series based on the English alphabetical order?

CMT ENU GOV IPW ?

(a) IPW
(b) JQX
(c) KQX
(d) JPW

Q87. Six people, C, D, E, F, G and T, are sitting around a circular table, facing the centre. Only two people sit between C and D when counted from the right of C. Only one person sits between E and G. G sits to the immediate left of D. T is not an immediate neighbour of E. Who sits second to the right of T?

(a) C
(b) E
(c) F
(d) D

Q88. Pari starts from Point A and drives 12 km towards south. She then takes a left turn, drives 10 km, turns right and drives 5 km. She then takes a right turn and drives 7 km. She takes a final right turn, drives 17 km and stops at Point P. How far (shortest distance) and towards which direction should she drive in order to reach Point A again? (All turns are 90° turns only unless specified.)

(a) 20 km towards north
(b) 3 km towards west
(c) 17 km towards east
(d) 20 km towards west

Q89. Seven boxes, A, B, C, D, M, N and O, are kept one over the other but not necessarily in the same order.

Only four boxes are kept between A and D. Only C is kept above A. Only two boxes are kept between O and N. B is kept immediately above M. N is not kept immediately above B.

Which box is kept fourth from the top?

(a) M
(b) O
(c) A
(d) B

Q90. Select the pair which follows the same pattern as that followed by the two set of pairs given below. Both pairs follow the same pattern.

FVB : ETE

RUC : QSF

(a) NSP : OQR
(b) MJJ : LHM
(c) OPQ : PNT
(d) JLH : KJJ

Q91. What should come in place of the question mark (?) in the given series?

89 94 102 113 127 ?

(a) 146
(b) 145
(c) 143

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(d) 144

Q92. Refer to the following number, symbol series and answer the question that follow. Counting to be done from left to right only.

(Left) 1 \ 1 \ @ ^ & % > * 9 & + 2 9 4 + 1 ^ 7 7 (Right)

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

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

Q93. What should come in place of the question mark (?) in the given series?

19 32 47 64 83 ?

(a) 92
(b) 98
(c) 112
(d) 104

Q94. In the following number-pairs, the second number is obtained by applying certain mathematical operation(s) to the first number. Select the number-pair in which the numbers are related in the same way as are the numbers of the following pairs. (NOTE: Operations should be performed on the whole numbers, without breaking down the numbers into their constituent digits. E.g. 13 – Operations on 13 such as adding to/subtracting from/multiplying with 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

72, 145

83, 167

(a) 46, 93
(b) 22, 48
(c) 35, 73
(d) 54, 125

Q95. 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 watches are clocks.

All clocks are pendulums.

Conclusions:

(I) Some watches are pendulums.

(II) All pendulum are clocks.

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

Q96. If 1 is added to each odd digit and 2 is subtracted from each even digit in the number 5187463, which of the following digits will be second from the left in the new number thus formed?

(a) 2
(b) 5
(c) 6
(d) 8

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Q97. Refer to the following number and symbol series and answer the question that follows. All numbers are single-digit numbers.Counting to be done from left to right only.

(Left) @ 8 $ & + 7 1 * 6 % Ω £ 2 4 5 9 # 3 (Right)

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

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

Q98. Seven boxes F, G, H, I, K, L, and O are kept one over the other but not necessarily in the same order. No box is kept above G. Only three boxes are kept between G and F. Only one box is kept between I and L. L is kept immediately above F. Only four boxes are kept between I and K. H is kept at some place above O.

Which box is kept second below H?

(a) K
(b) O
(c) I
(d) F

Q99. Select the pair which follows the same pattern as that followed by the two pairs given below. Both pairs follow the same pattern.

LCP : PZV

TWB : XTH

(a) BQN : FNT
(b) HWK : LBO
(c) HTO : LQS
(d) UKD : YFH

Q100. If 3 is added to each odd digit and 1 is subtracted from each even digit in the number 6243514, what will be the sum of the digits which are second from the left and second from the right?

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

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (a) Titan Capital

The correct answer is Titan Capital.

Key Points

• Titan Capital, a prominent venture capital firm, launched a new investment vertical in May 2025 to focus on startups in the defence and strategic technology sectors in India.

• The firm aims to invest in innovative startups working on cutting-edge technologies like artificial intelligence (AI), robotics, cybersecurity, and advanced weapon systems to boost India's defence ecosystem.

• This initiative aligns with the Indian government's push towards Aatmanirbhar Bharat (self-reliant India) and the modernization of defence infrastructure.

• Titan Capital has a strong track record of supporting early-stage startups across various domains, making it a credible player in fostering innovation in defence technology.

• With this move, Titan Capital seeks to create a collaborative environment between the private sector and the defence establishment to foster technological advancements.

Additional Information

• Nexus Venture Partners

• A leading venture capital firm primarily focused on technology and internet startups in India and the US.

• Investments by Nexus Venture Partners have included companies like Delhivery, Druva, and Unacademy.

• Accel Partners

• A globally recognized venture capital firm known for its investments in consumer products, technology, and internet businesses.

• Accel Partners has been instrumental in funding companies like Flipkart, Swiggy, and Freshworks.

• Accel Partners has not been reported to focus specifically on defence and strategic technology sectors.

• Sequoia Capital

• Sequoia Capital is one of the most influential venture capital firms globally, investing in technology companies ranging from startups to established enterprises.

• It has supported firms like Zomato, Byju's, and Ola in India.

• While Sequoia Capital is active in various domains.

Q2. Answer: (d) Tripura

The correct answer is Tripura.

Key Points

• Tripura shares a boundary of approximately 856 km with Bangladesh, making it one of the Indian states with significant border connectivity to the country.

• About 84% of Tripura’s boundary is surrounded by Bangladesh, with districts like North Tripura, South Tripura, and West Tripura sharing borders.

• It plays a crucial role in India-Bangladesh relations, including trade, cultural exchanges, and cross-border cooperation.

• Agartala, the capital city of Tripura, is strategically located near the border, enhancing its importance in cross-border connectivity and transportation networks.

• Tripura has several designated Land Customs Stations (LCS) such as Akhaura and Srimantapur, facilitating trade between India and Bangladesh.

Additional Information

• Nagaland:

• Nagaland is located in the northeastern part of India and shares its international boundary with Myanmar, not Bangladesh.

• The state is known for its rich tribal culture, biodiversity, and the Hornbill Festival, which attracts global attention.

• It plays a significant role in India’s Act East Policy due to its proximity to Southeast Asia.

• Arunachal Pradesh:

• Arunachal Pradesh shares its international borders with Bhutan, China, and Myanmar, but not with Bangladesh.

• The state is known for its scenic beauty, dense forests, and the presence of the eastern Himalayan ranges.

• It holds geopolitical significance due to its location near the India-China border.

• Odisha:

• Odisha is located in eastern India and does not share an international boundary with Bangladesh or any other country.

• The state is known for its coastal plains, famous temples like the Jagannath Temple, and rich cultural heritage.

• It has a long coastline along the Bay of Bengal, making it important for maritime activities.

Important Points

• India shares a 4,096 km-long border with Bangladesh, which is the longest international boundary India has with any country.

• Five Indian states share borders with Bangladesh: West Bengal, Assam, Meghalaya, Tripura, and Mizoram.

Q3. Answer: (a) Uttar Pradesh

The correct answer is Uttar Pradesh.

Key Points

• In 2025, Uttar Pradesh announced an investment of Rs. 6,124 crore to enhance road connectivity and infrastructure expansion across the state.

• The investment aims to strengthen economic growth, improve logistics, and boost regional connectivity within the state.

• Uttar Pradesh has been focusing on infrastructure as part of its development agenda, including expressways, highways, and rural road networks under the state's comprehensive development programs.

• The state government's efforts align with its goal of transforming Uttar Pradesh into a $1 trillion economy by improving connectivity to industrial corridors, agriculture belts, and urban hubs.

• This initiative is expected to create thousands of jobs and support the state's mission of inclusive growth and development.

Additional Information

• Maharashtra

• Maharashtra is known for its robust infrastructure projects, including the Mumbai-Nagpur Samruddhi Mahamarg and the Mumbai Metro expansion.

• It has been focusing on urban transportation and industrial growth, with significant investments in smart cities, ports, and highways.

• Gujarat

• Gujarat has been a leader in industrial infrastructure development, with projects like the Delhi-Mumbai Industrial Corridor (DMIC) and GIFT City (Gujarat International Finance Tec-City).

• The state is also known for its well-developed road network and renewable energy initiatives.

• Tamil Nadu

• Tamil Nadu is focusing on industrial growth and infrastructure expansion, including state highways and metro rail projects in Chennai.

• The Tamil Nadu Infrastructure Development Board (TNIDB) oversees various investment projects aimed at boosting the state's economy.

Q4. Answer: (b) Solar Defence and Aerospace Limited

The correct answer is Solar Defence and Aerospace Limited.

Key Points

• Solar Defence and Aerospace Limited developed Bhargavastra, a multi-layered counter-drone system in May 2025.

• Bhargavastra is a cutting-edge defense technology designed to neutralize drone threats effectively.

• The system incorporates advanced features such as real-time detection, tracking, and neutralization of drones using kinetic and non-kinetic solutions.

• It is a significant innovation in counter-drone warfare, addressing growing security concerns posed by rogue drones.

• This system is expected to enhance India's defense capabilities, especially in safeguarding sensitive installations and critical infrastructure.

Additional Information

• Bharat Electronics Limited (BEL)

• Bharat Electronics Limited is a leading public sector enterprise under the Ministry of Defence, India, specializing in the design and manufacture of electronic products for the defense sector.

• BEL has expertise in radars, communication systems, and electronic warfare, among other domains.

• Defence Research and Development Organisation (DRDO)

• The DRDO is India's premier research and development organization under the Ministry of Defence.

• It is responsible for developing indigenous defense technologies, including missiles, radars, and avionics.

• Although DRDO has developed various counter-drone solutions.

• Tata Advanced Systems Limited (TASL)

• TASL is a private-sector defense manufacturer in India, known for its contributions to aerospace and defense engineering.

• It is involved in projects related to unmanned aerial vehicles (UAVs), missile systems, and avionics.

Q5. Answer: (c) Gulf Cooperation Council (GCC)

The correct answer is Gulf Cooperation Council (GCC).

Key Points

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• In May 2025, China announced visa-free access for all member states of the Gulf Cooperation Council (GCC).

• The Gulf Cooperation Council (GCC) consists of six member states: Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (UAE).

• This decision highlights the growing economic and diplomatic ties between China and the GCC countries, particularly in areas like trade, energy, and infrastructure development.

• The move is part of China's broader strategy to strengthen its presence in the Middle East, especially under its Belt and Road Initiative (BRI).

• The visa-free arrangement is expected to boost tourism, cultural exchange, and business opportunities between China and the GCC member states.

Additional Information

• Association of Southeast Asian Nations (ASEAN):

• ASEAN is a regional intergovernmental organization comprising 10 Southeast Asian countries: Indonesia, Malaysia, Philippines, Singapore, Thailand, Brunei, Vietnam, Laos, Myanmar, and Cambodia.

• Its primary objective is to promote economic, political, and security cooperation among member states.

• China already has strong economic ties with ASEAN countries and has a free trade agreement with the bloc under the ASEAN-China Free Trade Area (ACFTA).

• European Union (EU):

• The European Union is a political and economic union of 27 member states located primarily in Europe.

• China and the EU share a complex relationship, with Europe being one of China's largest trading partners.

• China has not announced visa-free access for EU countries but continues to engage in trade and diplomatic discussions with the EU.

• South Asian Association for Regional Cooperation (SAARC):

• SAARC is a regional intergovernmental organization and geopolitical union of eight South Asian countries: Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka.

• The organization's primary focus is to promote regional integration and economic cooperation among member states.

• China is not a member of SAARC but holds observer status and has shown interest in strengthening its ties with South Asian countries.

Q6. Answer: (b) West Bengal

The correct answer is West Bengal.

Key Points

• The Indian Army conducted the 'Teesta Prahar' integrated field exercise in May 2025 in West Bengal.

• The exercise focused on demonstrating the operational readiness of the Indian Army in handling various military scenarios.

• 'Teesta Prahar' emphasized joint operations and combined capabilities across different units and formations.

• The name 'Teesta' is derived from the Teesta River, which flows through West Bengal and is significant to the region.

• Such exercises showcase the Indian Army's preparedness for situations like natural disasters, border security, and counter-terrorism operations.

Additional Information

• Madhya Pradesh:

• Madhya Pradesh is known for hosting various military exercises, such as the Indra Series, in collaboration with foreign nations like Russia.

• The region is significant for its central location and military training facilities, but it was not involved in the 'Teesta Prahar' exercise.

• Assam:

• Assam plays a vital role in India's northeastern defense strategy due to its proximity to border areas and strategic military installations.

• Although Assam is known for joint military exercises like Eastern Command drills, 'Teesta Prahar' was not conducted here.

• Rajasthan:

• Rajasthan is a key area for desert warfare exercises such as Operation Desert Strike and other military drills.

• It is frequently used for large-scale military operations due to its terrain, but it was not the site of 'Teesta Prahar'.

Q7. Answer: (d) Gramadhyaksha

The correct answer is Gramadhyaksha.

Key Points

• During the Gupta period, the Gramadhyaksha was the village headman responsible for the administration, management, and

overall welfare of the village.

• He acted as a link between the rural population and the central administration, ensuring the smooth functioning of the governance at the village level.

• The Gramadhyaksha was tasked with maintaining law and order, collecting revenue, and addressing disputes within the village.

• This role was highly regarded during the Gupta period, as villages were considered the smallest unit of governance and the backbone of the empire's economy.

• The Gramadhyaksha worked in coordination with other officials, such as the Mahattara, to ensure efficient governance and tax collection.

Additional Information

• Mahattara:

• The Mahattara was a senior village official during the Gupta period, often assisting the Gramadhyaksha in administrative duties.

• They were primarily responsible for advising the Gramadhyaksha on important matters related to governance and village welfare.

• In some cases, they also played a role in revenue collection and land management.

• Uparika:

• The Uparika was a provincial governor during the Gupta period.

• They were responsible for overseeing the administration of a province or region within the empire, ensuring adherence to the central government's directives.

• The Uparika reported directly to the central administration and played a key role in maintaining the empire's stability.

• Amatyas:

• The Amatyas were ministers or high-ranking officials in the Gupta administration.

• They were responsible for advising the king on matters of state and assisting in the governance of the empire.

• Amatyas often held specialized portfolios, such as finance, defense, or justice, and played a critical role in policy formulation and implementation.

Q8. Answer: (b) High death rate and infant mortality

The correct answer is High death rate and infant mortality.

Key Points

• At the time of independence in 1947, India had a very high death rate and infant mortality rate, primarily due to lack of healthcare facilities, malnutrition, and widespread diseases.

• The infant mortality rate was alarmingly high, with a significant percentage of children not surviving beyond their first year of life.

• India faced widespread epidemics such as cholera, malaria, and tuberculosis, which further contributed to the high death rate.

• Limited access to medical care and poor sanitation were major contributors to the demographic challenges at the time.

• The life expectancy during independence was also very low, around 32 years, due to the high prevalence of diseases and poor living conditions.

Additional Information

• High life expectancy

• Life expectancy refers to the average number of years a person is expected to live based on current mortality trends.

• At the time of independence, India's life expectancy was extremely low (around 32 years), so this option is incorrect.

• Over the years, improvements in healthcare, nutrition, and sanitation have significantly increased life expectancy in India, which is now over 70 years.

• Aging population

• An aging population refers to a demographic trend where the proportion of elderly people in the population increases.

• At independence, India had a predominantly young population, with a high birth rate and a low life expectancy, making this option incorrect.

• Currently, India still has a young population, but an aging population is expected to emerge as a concern in the future.

• Low birth rate

• Birth rate refers to the number of live births per thousand people in a year.

• At the time of independence, India had a very high birth rate, not a low one, due to cultural and societal norms, making this option incorrect.

• In recent decades, the birth rate has declined due to family planning initiatives and increased awareness.

Q9. Answer: (b) Trigonella foenum graecum

The correct answer is Trigonella foenum graecum.

Key Points

• Trigonella foenum graecum, commonly known as fenugreek, belongs to the Fabaceae family and is extensively used in cooking as a spice and flavoring agent.

• Fenugreek seeds are rich in nutrients such as protein, fiber, vitamins, and minerals like iron and magnesium, making them valuable as a food supplement.

• It is widely used in traditional medicine for its potential health benefits, including improving digestion, reducing inflammation, and managing blood sugar levels.

• Fenugreek seeds have a distinct aroma and are used in various cuisines worldwide, particularly in Indian, Middle Eastern, and Mediterranean dishes.

• The plant is also known for its agricultural importance as it helps improve soil fertility by fixing nitrogen.

Additional Information

• Dolichos oleifera lablab:

• Commonly known as hyacinth bean, it is a climbing plant used as a vegetable and fodder crop.

• It is not typically used as a spice or flavoring agent but is consumed in its immature pod form as a vegetable in certain cuisines.

• Cajanus cajan:

• Also known as pigeon pea, it is a legume widely cultivated for its edible seeds.

• Pigeon peas are a staple in many tropical and subtropical regions, often used in soups, stews, and curries.

• Unlike fenugreek, it is not used as a spice or flavoring agent.

• Arachis hypogea:

• Commonly known as the peanut or groundnut, it is a legume grown for its edible seeds.

• Peanuts are used to produce oil, butter, and flour and are consumed as snacks or in various culinary preparations.

• They are not used as a spice but are valued for their high protein and fat content.

Q10. Answer: (c) 1953

The correct answer is 1953.

Key Points

• The First Backward Classes Commission was appointed by the Government of India in January 1953.

• The commission was headed by Kalelkar, hence it is also referred to as the Kalelkar Commission.

• Its primary objective was to investigate the conditions of socially and educationally backward classes in India and recommend measures to improve their status.

• The commission submitted its report in 1955, but the report was not implemented due to various challenges and disagreements regarding the criteria for identifying backward classes.

• The Kalelkar Commission is significant as it was the first attempt by the Indian government to address issues of social and educational backwardness.

Additional Information

• National Commission for Backward Classes (NCBC)

• National Commission for Backward Classes (NCBC) in India, is a constitutional body that safeguards the rights and monitors the development of socially and educationally disadvantaged groups (OBCs).

• It examines grievances, evaluates welfare measures, and advises the government on socio-economic development, holding constitutional status since the 102nd Amendment in 2018 under Article 338B, evolving from its earlier statutory form established in 1993.

Q11. Answer: (d) 3% of GDP

The correct answer is 3% of GDP.

Key Points

• The Fiscal Responsibility and Budget Management (FRBM) Act was enacted in 2003 to institutionalize financial discipline and reduce India's fiscal deficit.

• Under the original FRBM Act, the fiscal deficit target was set at 3% of GDP by 2008-09.

• The FRBM Act aimed to ensure long-term macroeconomic stability and improve fiscal management by reducing government borrowing and debt levels.

• The Act required the government to submit an annual Medium-Term Fiscal Policy Statement to Parliament, outlining plans to meet fiscal targets.

• While the FRBM Act mandated fiscal consolidation, compliance faced challenges due to economic downturns and external

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pressures such as the global financial crisis of 2008.

Additional Information

• Fiscal Responsibility and Budget Management (FRBM) Act

• The FRBM Act is a landmark legislation aimed at ensuring fiscal prudence and reducing government debt.

• It introduced measures to improve transparency in India's fiscal policy and impose fiscal discipline on the government.

• Amendments to the FRBM Act have been introduced over the years to accommodate changing economic realities, including provisions for exceptional circumstances like national security or severe economic downturns.

• Zero deficit

• A zero fiscal deficit implies that government expenditure matches revenue exactly, without borrowing. While theoretically desirable, it is impractical for a growing economy like India, which requires borrowing for infrastructure and development projects.

• The FRBM Act did not mandate a zero deficit but aimed to reduce the deficit to sustainable levels.

Q12. Answer: (d) JN Brønsted and Thomas M Lowry

The correct answer is JN Brønsted and Thomas M Lowry.

Key Points

• Johannes Nicolaus Brønsted (Denmark) and Thomas Martin Lowry (England) independently proposed the concept of acid-base reactions as proton transfer reactions in 1923.

• The Brønsted-Lowry theory defines acids as proton donors and bases as proton acceptors.

• This theory expanded the understanding of acid-base chemistry beyond the Arrhenius definition, accommodating reactions in non-aqueous solvents.

• Their work laid the foundation for modern acid-base chemistry and is widely applicable in chemical, biological, and industrial processes.

• The Brønsted-Lowry model is particularly significant because it explains acid-base behavior in the absence of water, making it more versatile than earlier models.

Additional Information

• Guillaume F. Rouelle and Humphry Davy:

• Guillaume F. Rouelle was a French chemist who introduced the concept of acids and their reactions in the 18th century, but he did not develop a proton-transfer model.

• Humphry Davy (1778-1829) was a British chemist who studied the chemical properties of acids and bases, suggesting that their action was related to their composition but did not propose the proton-transfer model.

• Svante Arrhenius and Peter Waage:

• Svante Arrhenius proposed the Arrhenius definition of acids and bases in 1884, stating that acids produce H^+ ions in water and bases produce OH^−.

• Peter Waage, along with Cato Guldberg, formulated the Law of Mass Action in 1864, which describes chemical equilibrium but does not focus on acid-base proton transfer.

• Gilbert N Lewis and S.P.L. Sørensen:

• Gilbert N. Lewis proposed the Lewis definition of acids and bases in 1923, identifying acids as electron pair acceptors and bases as electron pair donors.

• S.P.L. Sørensen was a Danish chemist who introduced the pH scale in 1909, facilitating the measurement of acidity but did not propose a proton-transfer model.

Q13. Answer: (c) Powers of state governments to identify OBCs

The correct answer is Powers of state governments to identify OBCs.

Key Points

• The 105th Constitutional Amendment Act, 2021, restored the power of states and union territories to identify and notify Other Backward Classes (OBCs) for their respective regions.

• This amendment modified Article 342A, empowering states to prepare their own list of OBCs distinct from the central list.

• The amendment was necessitated after the Supreme Court's judgment in the Maratha quota case (2021), which limited the powers of states to notify OBCs.

• It allows states to provide reservations for OBCs in jobs and educational institutions based on regional requirements.

• The 105th Constitutional Amendment Act ensures decentralization and caters to the socio-economic needs of backward classes at the state level.

Additional Information

• Creation of a National Judicial Commission

• The National Judicial Commission has been proposed in the past as a mechanism for judicial appointments and oversight.

• It aims to replace the collegium system of appointing judges to the higher judiciary.

• The 99th Constitutional Amendment Act (2014) sought to establish the National Judicial Appointments Commission (NJAC), but it was struck down by the Supreme Court in 2015, citing violation of judicial independence.

• GST Reforms

• GST reforms pertain to the Goods and Services Tax (GST), a comprehensive indirect tax regime introduced in India in 2017.

• GST reforms focus on simplifying tax compliance, reducing tax evasion, and addressing issues like compensation to states and rate rationalization.

• While GST reforms are significant, they are unrelated to the 105th Constitutional Amendment Act.

• Women's Reservation

• Women's reservation refers to the legislative proposal to reserve seats for women in Parliament and state legislatures.

• The Women's Reservation Bill seeks to reserve 33% of seats for women in the Lok Sabha and state assemblies.

• While this is an important initiative, it is not connected to the 105th Constitutional Amendment Act.

Q14. Answer: (c) 26th

The correct answer is 26th.

Key Points

• The Ministry of Statistics and Programme Implementation (MoSPI) releases the publication titled 'Women and Men in India' annually, providing key insights into gender-based indicators in India.

• In April 2025, MoSPI published the 26th edition of this report, which continues its legacy of presenting statistical data on gender equality and demographic trends.

• The publication includes a wide range of indicators covering areas like education, health, employment, political participation, and other socio-economic parameters.

• This report is a critical tool for policymakers, researchers, and scholars to analyze and address issues related to gender inequality and to promote inclusive growth.

• The first edition of 'Women and Men in India' was released in 1995, and it has since become an authoritative source for gender-disaggregated data in the country.

Additional Information

• The 'Women and Men in India' series is an important initiative by MoSPI to provide statistical data on gender disparities in India.

• It serves as a key resource for understanding the progress made in gender equality and identifying areas requiring policy intervention.

• The report aligns with India's commitment to achieving gender-related targets under the Sustainable Development Goals (SDGs).

Q15. Answer: (b) Ricky Kej

The correct answer is Ricky Kej.

Key Points

• Ricky Kej, an Indian composer and environmentalist, is a three-time Grammy Award winner (2015, 2022, and 2023).

• He is known for his contribution to music and environmental awareness through his works.

• Ricky Kej received the Padma Shri Award in 2025 for his outstanding contributions to music and his efforts in promoting environmental sustainability.

• His Grammy-winning works include the albums "Winds of Samsara" (2015) and "Divine Tides" (2022, 2023), the latter being a collaboration with Stewart Copeland of The Police.

• In addition to his musical achievements, Ricky Kej is a UNESCO MGIEP "Global Ambassador for Kindness" and has been recognized internationally for his advocacy for climate action through music.

Additional Information

• Shankar Mahadevan

• Shankar Mahadevan is a renowned Indian playback singer and composer, part of the Shankar-Ehsaan-Loy trio.

• He has received numerous accolades, including National Film Awards and Filmfare Awards, for his contributions to Indian music.

• Although he has not won a Grammy, he is celebrated for his versatility and contributions to Indian classical and film music.

• Zakir Hussain

• Zakir Hussain is an internationally acclaimed tabla maestro and composer known for his contributions to Indian classical music.

• He received the Grammy Award in 1992 for his album "Planet Drum" and has also been honored with the Padma Shri and Padma Bhushan awards.

• Despite his Grammy win, he was not awarded the Padma Shri in 2025.

• A.R. Rahman

• A.R. Rahman is a globally renowned composer, singer, and music producer, often referred to as the "Mozart of Madras."

• He has won multiple Grammy Awards, including for the soundtrack of the film "Slumdog Millionaire."

• While he has been honored with the Padma Shri and Padma Bhushan, he did not receive the Padma Shri in 2025.

Q16. Answer: (d) Shirley Botchwey

The correct answer is Shirley Botchwey.

Key Points

• Shirley Ayorkor Botchwey is a Ghanaian politician and diplomat who has held significant positions in government, including serving as the Minister for Foreign Affairs and Regional Integration in Ghana since 2017.

• She is the first African woman to assume the position of the Commonwealth Secretary General, starting her term in April 2025, making history in the organization's leadership.

• The Commonwealth Secretary General leads the Commonwealth Secretariat, which is responsible for implementing the decisions and policies of the Commonwealth Heads of Government.

• Shirley Botchwey has been recognized for her extensive experience in diplomacy, governance, and international relations, which contributed to her selection for this prestigious role.

• The Commonwealth is an intergovernmental organization of 56 member states, most of which are former territories of the British Empire, and its leadership represents a diverse and global community.

Additional Information

• Tansu Çiller:

• She is a Turkish economist and politician who served as the Prime Minister of Turkey from 1993 to 1996, becoming the first and only woman to hold this position in Turkey.

• Çiller led Turkey during a period of significant economic reform and was involved in key diplomatic efforts regarding Turkey's relations with the European Union and NATO.

• Hanna Suchocka:

• She is a Polish politician and lawyer who served as the Prime Minister of Poland from 1992 to 1993, becoming the first woman to hold this office in Poland.

• Suchocka played a critical role in Poland's transition from communism to democracy and worked to implement economic reforms during her tenure.

• Sylvie Kinigi:

• She is a Burundian politician who served as the Prime Minister of Burundi from 1993 to 1994, becoming the first woman to hold this position in the country.

• Kinigi's tenure came during a turbulent time in Burundi's history, marked by political instability and ethnic conflict.

Q17. Answer: (b) Odia

The correct answer is Odia.

Key Points

• Odia is the official language of Odisha and is spoken by the majority of the population in the state.

• It is one of the 22 scheduled languages of India and holds the status of a Classical Language as recognized by the Government of India.

• Odia has a rich literary tradition dating back to over 1,000 years and is deeply rooted in Indian culture and history.

• The Odia script has evolved from the ancient Brahmi script and is used to write the language.

• Notable literary works in Odia include writings by poets like Sarala Das and Upendra Bhanja, contributing significantly to Indian literature.

Additional Information

• Punjabi

• Punjabi is primarily spoken in Punjab, a state in northern India, and is also widely spoken in Pakistan’s Punjab province.

• It is written in two scripts: Gurmukhi in India and Shahmukhi in Pakistan.

• Punjabi is known for its rich cultural heritage, including Bhangra music and dance, and its contribution to Indian cinema.

• Marathi

• Marathi is the official language of Maharashtra, a state in western India.

• It belongs to the Indo-Aryan branch of the Indo-European language family.

• Marathi literature has a long history, with saints like Dnyaneshwar and Tukaram contributing to its spiritual and poetic works.

• Kannada

• Kannada is the official language of Karnataka, a state in southern India.

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• It is one of the oldest Dravidian languages and has a history of over 2,000 years.

• Kannada literature has produced notable works, including the ancient Kavirajamarga and modern writings by authors like Kuvempu.

• Languages of India

• India is a linguistically diverse country with 22 scheduled languages recognized by the Constitution of India.

• Each state in India has its own official language, reflecting the cultural and regional diversity of the country.

• The languages are grouped into two major families: Indo-Aryan and Dravidian, along with a few from other language families.

Q18. Answer: (c) Supreme Court

The correct answer is Supreme Court.

Key Points

• The Supreme Court of India is known as the 'Guardian of the Constitution' because it ensures the enforcement and protection of the fundamental rights of citizens.

• It has the authority to interpret the Constitution and resolve disputes between the Union and States or among States themselves.

• Under Article 32 of the Indian Constitution, the Supreme Court guarantees the right to constitutional remedies, allowing individuals to approach the court directly in case of violation of their fundamental rights.

• The Supreme Court is vested with the power of judicial review, which enables it to strike down any law or executive action that it deems unconstitutional.

• It is the apex judicial authority in India, and its decisions are binding on all other courts in the country.

Additional Information

• District Court

• District Courts are subordinate courts that deal with civil and criminal cases at the district level.

• They function under the supervision of the High Court of the respective state.

• While they play an important role in the justice delivery system, they do not have constitutional authority like the Supreme Court.

• High Court

• High Courts are the highest judicial bodies at the state level and handle civil, criminal, and constitutional matters within their jurisdiction.

• They also have the power of judicial review but are subordinate to the Supreme Court.

• High Courts can interpret the Constitution but cannot act as the ultimate guardian of constitutional provisions like the Supreme Court.

• Lok Adalat

• Lok Adalat is a system of alternative dispute resolution in India aimed at resolving disputes outside the formal judicial process.

• It is governed by the Legal Services Authorities Act, 1987, and is primarily used for settling civil disputes and minor criminal cases.

• While it promotes speedy and amicable settlements, it does not have constitutional authority or the power to interpret the Constitution.

Q19. Answer: (c) d-block

The correct answer is d-block.

Key Points

• Transition elements are found in the d-block of the periodic table, which includes elements from groups 3 to 12.

• These elements are characterized by the progressive filling of the d-orbitals of their atoms.

• The d-block elements are also referred to as transition metals and include elements such as iron (Fe), copper (Cu), and chromium (Cr).

• They exhibit unique properties such as variable oxidation states, the formation of colored compounds, and the ability to form complexes.

• The d-block elements play a crucial role in industries due to their catalytic properties and their application in alloys, electronics, and other fields.

Additional Information

• s-block:

• The s-block elements are found in groups 1 and 2 of the periodic table, including alkali metals (e.g., sodium, potassium) and alkaline earth metals (e.g., magnesium, calcium).

• Their outermost electrons occupy the s-orbital, and they typically exhibit a single oxidation state.

• These elements are highly reactive, especially with water and oxygen, and are good conductors of heat and electricity.

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• p-block:
• The p-block elements are located in groups 13 to 18 of the periodic table.
• These include non-metals (e.g., oxygen, nitrogen), metalloids (e.g., boron, silicon), and some metals (e.g., aluminum, lead).
• Their outermost electrons occupy the p-orbitals, and they show a wide range of chemical and physical properties.
• They are involved in important industrial and biological processes, such as photosynthesis and the production of fertilizers.
• f-block:
• The f-block elements are the lanthanides and actinides, found below the main body of the periodic table.
• They are characterized by the filling of the 4f and 5f orbitals, respectively.
• These elements include rare earth metals and radioactive elements like uranium and thorium.
• f-block elements are used in advanced technologies, such as nuclear energy production and the development of superconductors.

Q20. Answer: (b) Extended Binary Coded Decimal Interchange Code

The correct answer is Extended Binary Coded Decimal Interchange Code.

Key Points

• EBCDIC stands for Extended Binary Coded Decimal Interchange Code, which is an 8-bit character encoding system.
• It was developed by IBM in 1963-64 for use with its mainframe and midrange computer systems.
• EBCDIC is used for representing alphanumeric characters in binary form, primarily in IBM-based systems.
• It supports 256 characters, including letters, numbers, special characters, and control characters.
• EBCDIC is less commonly used today as most systems have transitioned to ASCII and Unicode standards, but it is still in use in legacy IBM systems.

Additional Information

• Importance of EBCDIC:
• EBCDIC played a significant role in early computing history, particularly for IBM systems.
• It differs from ASCII (American Standard Code for Information Interchange) in terms of design and encoding structure.
• While ASCII became the dominant character encoding, EBCDIC remains relevant in certain IBM mainframe environments.

Q21. Answer: (c) Urban Planning and Development

The correct answer is Urban Planning and Development.

Key Points

• The India Infrastructure Report 2023 focuses on the challenges, strategies, and opportunities for the development of urban areas in India.
• The report emphasizes the need to address issues such as urban mobility, housing, sanitation, and sustainable infrastructure to ensure urban growth aligns with environmental and social goals.
• Released in December 2023 by Shri M. Venkaiah Naidu, the report provides policy recommendations to enhance urban governance and planning frameworks.
• The report highlights the importance of smart city initiatives, digital transformation, and green infrastructure to make cities more livable and inclusive.
• It also discusses the role of public-private partnerships (PPPs) in financing and implementing urban development projects efficiently.

Additional Information

• Forest Planning and Development
• Forest planning involves the management and conservation of forest resources for biodiversity, climate regulation, and sustainable timber production.
• India has launched initiatives such as the National Afforestation Programme (NAP) and the Green India Mission to enhance forest cover and ecosystem services.
• Key challenges include deforestation, habitat loss, and the need for community participation in forest conservation.
• Coastal Planning and Development
• Coastal planning focuses on managing coastal resources and mitigating the impacts of climate change, erosion, and rising sea levels.
• The Indian government has implemented the Coastal Regulation Zone (CRZ) norms to regulate activities along the coastline.
• Development of ports, coastal tourism, and disaster-resilient infrastructure are crucial components of coastal planning.
• Rural Planning and Development
• Rural development aims to improve the quality of life in villages through better infrastructure, education, and healthcare.

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• Government schemes like Pradhan Mantri Gram Sadak Yojana (PMGSY) and MNREGA focus on rural connectivity and employment generation.

• Emphasis is also placed on agricultural productivity, water conservation, and rural entrepreneurship for sustainable rural growth.

Q22. Answer: (b) Promoting local-only trade

The correct answer is Promoting local-only trade.

Key Points

• The economic reforms in India initiated in 1991 were centered around liberalization, privatization, and globalization (LPG).

• Globalization, as part of these reforms, focused on integrating the Indian economy with the global market to increase trade and economic interdependence.

• Promoting "local-only trade" is contrary to the fundamental essence of globalization, which emphasizes international trade and the free movement of goods, services, and investments across borders.

• The reforms under globalization included encouraging foreign direct investment (FDI), liberalizing imports, and allowing foreign technology to foster competition and economic growth in India.

• Thus, the idea of restricting trade to a local-only framework was not aligned with the objectives of globalization in India's economic reforms.

Additional Information

• Allowing foreign technology:

• Globalization enabled the transfer of advanced technology from developed countries to India, helping to modernize various industries.

• Technological collaborations and joint ventures with foreign companies contributed to skill development and innovation in India.

• Examples include the entry of global automobile companies and advancements in telecommunications and IT sectors.

• Encouraging foreign direct investment (FDI):

• FDI played a pivotal role in the globalization process by bringing in foreign capital, boosting industrial growth, and generating employment opportunities.

• India opened up several sectors for FDI, including manufacturing, IT, retail, and infrastructure.

• FDI also facilitated the integration of Indian companies into global supply chains, enhancing their competitiveness.

• Liberalizing imports:

• Reducing trade barriers such as tariffs, duties, and quotas was a critical step in promoting globalization.

• Liberalizing imports allowed Indian consumers to access a variety of high-quality goods at competitive prices.

• This measure also encouraged domestic industries to improve their efficiency and quality to compete globally.

Q23. Answer: (b) Manu Bhaker

The correct answer is Manu Bhaker.

Key Points

• Manu Bhaker achieved a historic feat by winning two Olympic medals in shooting during the Paris 2024 Olympics.

• She became the first Indian woman shooter to secure two medals in a single Olympic edition.

• Her outstanding performance in the 10m Air Pistol and Mixed Team Shooting events earned her global recognition.

• In January 2025, Minu Bhaker was awarded the prestigious Major Dhyan Chand Khel Ratna Award for her exceptional achievements in sports.

• Minu Bhaker's journey symbolizes dedication, perseverance, and the rising dominance of Indian women in shooting sports on the global stage.

Additional Information

• Swapnil Suresh Kusale

• Swapnil Kusale is an Indian professional shooter specializing in rifle events such as the 50m Rifle 3 Positions.

• He has represented India in various international competitions, including ISSF World Cups and Asian Championships.

• Despite his talent and contributions to Indian shooting, he has not won two Olympic medals in a single edition of the Games.

• Sarabjot Singh

• Sarabjot Singh is an emerging talent in Indian shooting, particularly in the 10m Air Pistol category.

• He has secured medals in ISSF Junior World Cups and other international tournaments.

• Although he has shown great potential, he did not achieve the historic milestone of two Olympic medals in Paris 2024.

• Manu Bhaker

• Manu Bhaker is one of India's most accomplished shooters, having won numerous medals in ISSF World Cups and Youth Olympics.

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• She competes in events such as the 10m Air Pistol and 25m Pistol categories.

• While she has been a prominent figure in Indian shooting, the feat of winning two Olympic medals in Paris 2024 was achieved by Minu Bhaker.

Q24. Answer: (a) Narendra Modi

The correct answer is Narendra Modi.

Key Points

• The seventh edition of the Khelo India Youth Games 2025 was inaugurated by Prime Minister Narendra Modi.

• The Khelo India Youth Games is an initiative aimed at promoting sports culture and identifying young talent across India.

• This edition was held in the state of Bihar, marking a significant milestone for the state in hosting national-level sports events.

• The Khelo India program, launched in 2018, emphasizes grassroots-level participation and the development of sports infrastructure.

• Under Narendra Modi's leadership, the government has consistently promoted sports and fitness initiatives, including campaigns like "Fit India Movement" and the expansion of the Khelo India program.

Additional Information

• Arif Mohammad Khan:

• Arif Mohammad Khan is the current Governor of Kerala, having assumed office in September 2019.

• He is a veteran politician and has been part of various political parties during his career.

• Nitish Kumar:

• Nitish Kumar is the Chief Minister of Bihar and has served multiple terms in this role.

• While he plays a significant role in the development of Bihar, including promoting sports infrastructure, the inauguration of the Khelo India Youth Games 2025 was conducted by the Prime Minister.

• Mansukh Mandaviya:

• Mansukh Mandaviya is the Union Minister for Health and Family Welfare as of 2023.

• He is primarily known for his work in healthcare reforms, including initiatives like Ayushman Bharat and vaccination drives.

Q25. Answer: (b) during the pleasure of the Governor

The correct answer is During the pleasure of the Governor.

Key Points

• In the parliamentary system of India, ministers at the state level hold office during the pleasure of the Governor as per Article 164(1) of the Indian Constitution.

• The Governor exercises this pleasure on the advice of the Chief Minister, who must have the confidence of the State Legislative Assembly.

• The term "pleasure of the Governor" signifies that a minister can be removed if the Governor, acting on the advice of the Chief Minister, deems it necessary.

• Although the Governor is the constitutional head of the state, real executive power lies with the Council of Ministers headed by the Chief Minister.

• Ministers hold office as long as they maintain the confidence of the majority in the State Legislative Assembly.

Additional Information

• Parliamentary System of Governance

• India follows a parliamentary system of governance where the executive is accountable to the legislature.

• The Governor, as the constitutional head of the state, acts on the advice of the Chief Minister and Council of Ministers for executive decisions.

• The system ensures checks and balances between the executive and legislature for effective governance.

Q26. Answer: (d) Kopassus

The correct answer is Kopassus.

Key Points

• Kopassus is an elite special forces unit of the Indonesian Army, known for its counter-terrorism, unconventional warfare, and specialized military operations.

• Kopassus participated in Exercise GARUD SHAKTI, a bilateral military exercise held between the armies of India and Indonesia to enhance cooperation and interoperability.

• The exercise focuses on counter-terrorism operations, jungle warfare, and urban warfare tactics, highlighting the expertise of Kopassus in such domains.

• Exercise GARUD SHAKTI is conducted annually and serves as a platform for exchanging tactical knowledge and strengthening

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defense ties between both nations.

• Kopassus is recognized globally for its rigorous training, high operational readiness, and ability to perform in challenging environments.

Additional Information

• Kostrad

• Kostrad, or Komando Cadangan Strategis Angkatan Darat, is the Indonesian Army's strategic reserve command.

• It is responsible for conventional warfare and strategic military operations, but it does not specialize in counter-terrorism or special operations like Kopassus.

• Its primary focus is on maintaining national defense and handling large-scale military operations, making it less relevant to exercises like GARUD SHAKTI.

• Marinir

• Marinir is the Indonesian Marine Corps, a branch of the Indonesian Navy.

• It specializes in amphibious operations and naval support missions, rather than jungle warfare or counter-terrorism.

• While highly skilled in their domain, Marinir is not typically involved in exercises like GARUD SHAKTI, which focus on land-based special operations.

• TNI-AU

• TNI-AU (Tentara Nasional Indonesia-Angkatan Udara) refers to the Indonesian Air Force.

• Its primary role involves air defense, aerial reconnaissance, and air support for ground forces.

• As GARUD SHAKTI is a land-based exercise emphasizing counter-terrorism and special operations.

Q27. Answer: (d) Union Public Service Commission

The correct answer is Union Public Service Commission.

Key Points

• The Union Public Service Commission (UPSC) is the central recruiting agency in India responsible for conducting examinations and selecting candidates for All India Services, including the IAS (Indian Administrative Service), IPS (Indian Police Service), and IFS (Indian Forest Service).

• UPSC was established under Article 315 of the Indian Constitution and operates independently to ensure unbiased recruitment.

• It conducts the prestigious Civil Services Examination (CSE) annually, which is considered one of the toughest exams in India.

• The commission ensures merit-based selection of candidates for various Group A and Group B services of the central government, as well as for All India Services like IAS, IPS, and IFS.

• UPSC also advises the government on matters related to recruitment rules, promotions, and disciplinary actions for civil servants.

Additional Information

• Election Commission of India (Option 1):

• The Election Commission of India (ECI) is an autonomous constitutional authority established under Article 324 of the Indian Constitution.

• It is responsible for administering the election process in India, including elections to the Parliament, State Legislatures, and the offices of the President and Vice President.

• ECI ensures free and fair elections in the country and is independent of executive control.

• Comptroller and Auditor General (CAG) of India (Option 2):

• The CAG is a constitutional authority established under Article 148 of the Indian Constitution.

• The CAG is responsible for auditing all receipts and expenditures of the Government of India, state governments, and public sector organizations.

• It ensures accountability and transparency in government financial operations.

• Finance Commission (Option 3):

• The Finance Commission is a constitutional body established under Article 280 of the Indian Constitution.

• It is responsible for recommending the distribution of tax revenues between the central and state governments and among the states themselves.

• The Finance Commission is reconstituted every five years and submits its recommendations to the President of India.

Q28. Answer: (a) limit global temperature rise

The correct answer is limit global temperature rise.

Key Points

• The Paris Agreement, adopted in December 2015, is a landmark international treaty under the United Nations Framework Convention on Climate Change (UNFCCC) designed to combat climate change and its adverse effects globally.

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• The primary goal of the Paris Agreement is to limit the global average temperature increase to well below 2°C above pre-industrial levels and to pursue efforts to limit the rise to 1.5°C.

• The agreement emphasizes the importance of reducing greenhouse gas emissions, with countries committing to implement Nationally Determined Contributions (NDCs) and to enhance their climate action plans over time.

• It also focuses on strengthening resilience to climate impacts, promoting sustainable development, and providing financial support to developing nations for climate action.

• The Paris Agreement establishes a universal framework, recognizing the differentiated responsibilities and respective capabilities of developed and developing countries in addressing climate change.

Additional Information

• Halt desertification:

• Desertification refers to the degradation of land in arid, semi-arid, and dry sub-humid areas due to factors such as climatic variations and human activities.

• While combating desertification is an important environmental goal under the United Nations Convention to Combat Desertification (UNCCD), it is not the primary focus of the Paris Agreement.

• Efforts to address desertification often involve sustainable land management practices, afforestation, and soil conservation techniques.

• Eliminate air pollution:

• Air pollution refers to the presence of harmful substances, such as particulate matter, nitrogen oxides, and sulfur dioxide, in the atmosphere.

• While reducing greenhouse gas emissions indirectly helps improve air quality, the Paris Agreement does not specifically aim to eliminate air pollution.

• Air pollution is primarily addressed through national policies, regulations, and programs like the World Health Organization's air quality guidelines.

• Promote water conservation:

• Water conservation involves the sustainable management and use of water resources to ensure availability for future generations.

• Although water conservation is a critical environmental priority, it is not a direct objective of the Paris Agreement.

• Water conservation is often addressed through national and regional initiatives, such as watershed management, efficient irrigation practices, and rainwater harvesting.

Q29. Answer: (a) Rashtrakutas

The correct answer is Rashtrakutas.

Key Points

• The Rashtrakutas were a prominent dynasty in Indian history, but their empire was not based in modern-day Tamil Nadu.

• Their rule primarily extended across large parts of the Deccan Plateau, specifically in regions corresponding to present-day Maharashtra, Karnataka, and Andhra Pradesh.

• The Rashtrakutas were known for their contributions to art and architecture, including the construction of the famous Kailasa temple at Ellora.

• Their political and cultural influence was significant during the 8th to 10th centuries CE.

• They were contemporaries of other prominent dynasties like the Pandyas, Cholas, and Cheras, which ruled in Tamil Nadu.

Additional Information

• Chola Dynasty:

• The Cholas were one of the most prominent dynasties in Tamil Nadu, known for their extensive empire and naval dominance.

• Their rule saw the construction of iconic temples like the Brihadeeswara Temple at Thanjavur.

• They were significant patrons of art, literature, and architecture, contributing to the cultural richness of Tamil Nadu.

• The Chola Empire reached its zenith under rulers like Raja Raja Chola I and Rajendra Chola I, extending influence to Southeast Asia.

• Chera Dynasty:

• The Cheras were another ancient Tamil dynasty based in modern-day Kerala and parts of western Tamil Nadu.

• They were known for their trade relations with Romans, Greeks, and other ancient civilizations.

• Their capital was Vanji, and their emblem was the bow and arrow.

• They played a significant role in the Sangam Age, contributing to Tamil literature and culture.

• Pandya Dynasty:

• The Pandyas were based in the southern part of Tamil Nadu, with Madurai as their capital.

• They were known for their patronage of Tamil literature, temple architecture, and trade relations with Southeast Asia.

• The Meenakshi Amman Temple in Madurai is a testament to their architectural excellence.
• The Pandyas were prominent during the Sangam Age and later revived their power in the medieval period.

Q30. Answer: (d) landslide

The correct answer is landslide.

Key Points

• Slump is a type of landslide that involves the downward and outward movement of a mass of rock, earth, or debris along a curved surface.
• In a slump, the displaced material typically rotates as it moves, creating a concave upward slide surface.
• Slumps are often triggered by factors such as heavy rainfall, earthquakes, or human activities like deforestation and construction.
• They are commonly observed in areas with loose, unconsolidated soils and steep slopes.
• Slumps are considered a type of mass wasting, which is the downslope movement of soil and rock under the influence of gravity.

Additional Information

• Rock Fall:
• A rock fall occurs when individual rocks or boulders detach from a steep slope or cliff and fall freely through the air.
• Rock falls are typically caused by weathering, freeze-thaw cycles, or seismic activity, which weaken the rock over time.
• They are most common in mountainous or rocky terrains and can pose significant hazards to infrastructure and human life in such areas.
• Weathering:
• Weathering is the process of breaking down rocks and minerals at the Earth's surface into smaller particles through physical, chemical, or biological means.
• Unlike a landslide, weathering does not involve the movement of material downslope.
• Types of weathering include physical weathering (e.g., freeze-thaw cycles), chemical weathering (e.g., dissolution of minerals), and biological weathering (e.g., roots breaking rocks).
• Erosion:
• Erosion refers to the removal and transportation of soil, rock, and other surface materials by natural agents like water, wind, ice, or gravity.
• Unlike a landslide, erosion is a gradual process that occurs over an extended period of time.
• Common examples of erosion include riverbank erosion, coastal erosion, and wind erosion in arid regions.

Q31. Answer: (d) Pure ends require pure means.

The correct answer is Pure ends require pure means.

Key Points

• Gandhi firmly believed in the principle of ahimsa (non-violence) as a means to achieve truth and justice in society.
• He emphasized that means and ends are interconnected; impure means would inevitably corrupt the purity of the end.
• The philosophy of Satyagraha highlights that pure and ethical means are essential for achieving righteous and ethical outcomes.
• Gandhi's belief in the moral integrity of means was rooted in his spiritual and philosophical understanding of truth as the ultimate goal.
• He argued that adopting violent or unethical means to achieve noble ends would undermine the moral foundation of the goal itself.

Additional Information

• Option 1: Only ends matter, not the means
• Gandhi rejected the idea that only the end result mattered, as he believed that unethical or immoral means would compromise the value of the outcome.
• This approach is contrary to Gandhi's principle of Satyagraha, where purity of means is as important as the ends.
• Option 2: The ends justify the means
• This concept, often associated with Machiavellian philosophy, suggests that any means, even unethical ones, are acceptable if they lead to a desired goal.
• Gandhi strongly opposed this idea, asserting that moral corruption in the means would lead to a morally flawed end.
• Option 3: Violence is necessary for pure ends
• This view contradicts Gandhi's principle of non-violence (ahimsa), which he considered fundamental to achieving truth and justice.
• Gandhi believed that the use of violence would perpetuate a cycle of hatred and suffering, which is incompatible with achieving pure and noble ends.

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Q32. Answer: (a) ISRO Propulsion Complex, Mahendra Giri

The correct answer is ISRO Propulsion Complex, Mahendragiri.

Key Points

• The semicryogenic engine hot test was conducted successfully at the ISRO Propulsion Complex (IPRC), Mahendragiri, in April 2025.

• The test was a critical milestone in developing India’s next-generation rocket engines using eco-friendly and cost-effective propellants.

• The semicryogenic engine operates using liquid oxygen (LOX) as the oxidizer and refined kerosene (RP-1) as the fuel, making it efficient and powerful.

• The ISRO Propulsion Complex, located in Tamil Nadu, serves as a premier center for testing and assembling propulsion systems for India's space missions.

• This advancement aligns with ISRO's plans to enhance its launch vehicle capabilities for heavier payloads and interplanetary missions.

Additional Information

• Vikram Sarabhai Space Centre (VSSC), Thiruvananthapuram:

• VSSC is the main center for designing and developing launch vehicles for ISRO.

• It focuses on rocket development, including technologies for solid, liquid, and cryogenic propulsion systems.

• Satish Dhawan Space Centre (SDSC), Sriharikota:

• SDSC is the primary launch site for ISRO's rockets and satellites.

• It hosts facilities for vehicle assembly, integration, and launch operations.

• Down Range Station, Port Blair:

• This facility monitors and tracks vehicles post-launch.

• It provides telemetry data from the launch vehicle during its flight.

Q33. Answer: (d) 1952

The correct answer is 1952.

Key Points

• The Mines Act, 1952, was enacted by the Government of India to regulate the working conditions in mines and ensure the safety, health, and welfare of workers employed in mines.

• The Act applies to all types of mines, including open-cast and underground mines, and lays down provisions for inspections, safety measures, and penalties for violations.

• It mandates the appointment of qualified managers and supervisors to oversee mining operations and ensure compliance with safety standards.

• The Act specifies working hours, conditions of employment, and provisions for the welfare of workers, including medical facilities, canteens, and sanitation.

• The Mines Act, 1952, is a crucial legislation aimed at improving the living and working conditions of miners, reducing workplace hazards, and preventing exploitation.

Additional Information

• The primary acts governing mining in India are:

• The Mines Act, 1952, focusing on health, safety, and working conditions.

• The Mines and Minerals (Development and Regulation) Act, 1957 (MMDR Act), which regulates the development and control of minerals under Union control, alongside specific rules like the Offshore Areas Mineral (Development & Regulation) Act, 2002 for offshore operations.

• These foundational laws, supplemented by various rules and amendments (like the MMDR Amendment Acts of 1986, 1994, 2010), create the framework for India's mining sector.

Q34. Answer: (c) Bollywood

The correct answer is Bollywood.

Key Points

• Bollywood refers to the Indian Hindi-language film industry, primarily based in Mumbai (formerly Bombay), Maharashtra.

• It is widely recognized for its commercial, mainstream cinema featuring elaborate song-and-dance sequences, melodramatic narratives, and larger-than-life spectacle.

• Bollywood produces a significant portion of India's films and is one of the largest centers of film production globally.

• It is known for its unique blend of genres, including romance, action, comedy, drama, and musicals, often catering to mass audiences.

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• Popular Bollywood movies often incorporate cultural elements, traditional music, and themes that resonate with Indian audiences, making it a cultural phenomenon worldwide.

Additional Information

• Indie films:

• Indie films, or independent films, are produced outside the major studio system and often have a lower budget.

• They focus on artistic expression, unique storytelling, and niche audiences rather than commercial appeal.

• These films are known for their creative freedom and often explore unconventional themes or experimental filmmaking techniques.

• Regional cinema:

• Regional cinema refers to films made in various languages and regions of India, such as Tamil, Telugu, Malayalam, Bengali, Punjabi, Marathi, and others.

• These films often focus on regional culture, traditions, and local issues, catering to specific linguistic or cultural audiences.

• Regional cinema plays a significant role in showcasing India's diversity and has gained international recognition for its quality and storytelling.

• Parallel cinema:

• Parallel cinema, also known as art cinema, is a movement in Indian cinema characterized by realistic and issue-based storytelling.

• It emerged in the 1950s as an alternative to the commercial film industry, focusing on social and political themes.

• Directors like Satyajit Ray, Ritwik Ghatak, and Mrinal Sen were pioneers of this genre, emphasizing artistic and intellectual filmmaking over mass entertainment.

Q35. Answer: (b) Rowlatt Act

The correct answer is Rowlatt Act.

Key Points

• The Rowlatt Act, passed in March 1919, was officially called the Anarchical and Revolutionary Crimes Act of 1919.

• The act authorized the British government to imprison individuals suspected of revolutionary activities without trial for up to two years.

• This act sparked widespread anger and protests among Indians, as it curtailed civil liberties and judicial rights.

• In response, Mahatma Gandhi initiated the nationwide Satyagraha movement and called for April 6, 1919, to be observed as a day of non-violent protest.

• The infamous Jallianwala Bagh massacre on April 13, 1919, was a direct consequence of protests against the Rowlatt Act.

Additional Information

• Partition of Bengal:

• The Partition of Bengal took place in 1905 during the tenure of Lord Curzon, dividing Bengal into East Bengal and West Bengal.

• It was primarily justified by the British as an administrative measure but was widely seen as an attempt to divide Hindus and Muslims to weaken nationalist movements.

• The partition led to widespread protests and was eventually annulled in 1911.

• Simon Commission:

• The Simon Commission was a group of seven British MPs sent to India in 1928 to study constitutional reforms.

• It was widely opposed by Indians because it had no Indian representation, leading to protests and slogans like "Simon Go Back."

• Notably, Lala Lajpat Rai was injured during a protest against the Simon Commission and later succumbed to his injuries.

• Minto-Morley Reforms:

• The Minto-Morley Reforms were introduced in 1909 and aimed to provide limited political representation to Indians.

• It introduced separate electorates for Muslims, which sowed seeds of communalism in Indian politics.

• The reforms were criticized for being insufficient to meet the demands of Indian nationalists.

Q36. Answer: (d) It may be single or multi-member; initially, there was only a Chief Election Commissioner until 1989.

The correct answer is It may be single or multi-member; initially, there was only a Chief Election Commissioner until 1989.

Key Points

• The Constitution of India under Article 324 establishes the Election Commission of India (ECI) and grants it authority over the conduct of elections in India.

• Article 324 does not specify a fixed composition for the Election Commission; it gives the President of India the discretion to determine whether the ECI is a single-member or multi-member body.

• Initially, the ECI was a single-member body with only a Chief Election Commissioner (CEC) until 1989.

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• In 1989, the ECI became a multi-member body with the appointment of two Election Commissioners in addition to the CEC. Since then, it has functioned as a three-member body in most instances.

• The President has the authority to appoint Election Commissioners, and the composition of the Election Commission may vary over time as per requirements.

Additional Information

• The Election Commission of India (ECI) is a constitutional body established under Article 324 of the Constitution of India.

It is responsible for conducting free and fair elections to the Parliament, State Legislatures, and the offices of President and Vice-President.

• The ECI operates independently and is vested with powers to ensure impartiality and transparency in the electoral process.

Q37. Answer: (b) American Standard Code for Information Interchange

The correct answer is American Standard Code for Information Interchange.

Key Points

• ASCII stands for American Standard Code for Information Interchange, a character encoding standard developed in the 1960s.

• It is primarily used to represent text in computers, telecommunications equipment, and other devices.

• ASCII uses 7-bit binary numbers (from 0 to 127) to encode characters, including letters, numbers, symbols, and control characters.

• It was one of the first character encoding schemes to achieve widespread adoption and forms the basis for many modern encodings, including UTF-8.

• ASCII ensures compatibility between different systems by using standardized codes for text representation, making data exchange efficient and reliable.

Additional Information

• ASCII and Character Encoding

• Character encoding is essential in computing for representing text data digitally.

• ASCII was developed by the American National Standards Institute (ANSI) and became a foundational standard for encoding text in computers.

• Modern encoding systems, like Unicode, extend ASCII to include a wider range of characters to support global languages.

Q38. Answer: (d) Panna Biosphere Reserve

The correct answer is Panna Biosphere Reserve.

Key Points

• Panna Biosphere Reserve is located in the state of Madhya Pradesh, India, and is recognized as a significant biodiversity hotspot.

• It was designated as a Biosphere Reserve in 2020 by UNESCO under the Man and Biosphere (MAB) Program.

• The reserve is famous for its tiger population and is home to the Panna Tiger Reserve, which was revived after a near extinction of tigers in the area in 2009.

• The Panna Biosphere Reserve is situated on the Vindhya mountain ranges, and the Ken River flows through it, adding to its ecological diversity.

• Besides tigers, the reserve houses a variety of flora and fauna such as leopards, gharials, and Indian wolves, along with rich vegetation like teak and sal forests.

Additional Information

• Manas Biosphere Reserve

• Located in Assam, Manas Biosphere Reserve is a UNESCO World Heritage Site and a Project Tiger reserve.

• It is known for its unique wildlife, including the golden langur, pygmy hog, and Bengal florican.

• The reserve is a part of the Eastern Himalayan biodiversity hotspot and features diverse ecosystems such as grasslands and tropical forests.

• Nanda Devi Biosphere Reserve

• Situated in Uttarakhand, this reserve is a UNESCO World Heritage Site and includes the Nanda Devi and Valley of Flowers National Parks.

• It is known for its high-altitude biodiversity, including species like the snow leopard, Himalayan musk deer, and Himalayan tahr.

• The reserve is located in the Western Himalayas and is a popular destination for trekkers and nature enthusiasts.

• Similipal Biosphere Reserve

• Located in Odisha, this reserve is known for its dense forests, waterfalls, and rich biodiversity.

• It is home to several endangered species like the Bengal tiger, Asian elephant, and Indian bison (gaur).

• The reserve is named after the Similipal Hills and is a part of the Eastern Ghats.

Q39. Answer: (c) Dadabhai Naoroji

The correct answer is Dadabhai Naoroji.

Key Points

• Dadabhai Naoroji is known as the Grand Old Man of India and was a key figure in Indian nationalism.

• He introduced the 'Drain of Wealth' theory, which explained how the British colonial rule was draining economic resources from India.

• The theory was first articulated in his book "Poverty and Un-British Rule in India."

• Naoroji argued that British policies led to a systematic transfer of India's wealth to Britain, causing widespread poverty in India.

• He highlighted factors like excessive land revenue, high taxation, and the export of raw materials without adequate compensation to India as contributors to the economic drain.

• Dadabhai Naoroji was also the first Indian to be elected to the British Parliament and used his position to advocate for Indian interests.

Additional Information

• Subhash Chandra Bose:

• Subhash Chandra Bose was a prominent leader in the Indian independence movement and the founder of the Indian National Army (INA).

• He is famous for his slogan "Give me blood, and I will give you freedom."

• Although he played a critical role in the freedom struggle.

• MG Ranade:

• Mahadev Govind Ranade was a noted social reformer and economist during the British rule.

• He emphasized industrialization and modern education as solutions for India’s economic challenges.

• While his contributions to Indian economics are significant.

• C Rajagopalachari:

• C Rajagopalachari, also known as Rajaji, was an Indian politician, freedom fighter, and the last Governor-General of India.

• He was known for his administrative skills and writings.

Q40. Answer: (a) Nhava Sheva

The correct answer is Nhava Sheva.

Key Points

• Nhava Sheva, also known as Jawaharlal Nehru Port (JNP), is the largest container port in India as of May 2025.

• Located in Navi Mumbai, Maharashtra, Nhava Sheva handles a significant portion of India’s container cargo, contributing immensely to international trade.

• The port has state-of-the-art infrastructure and automation systems, making it the most efficient container terminal in India.

• Nhava Sheva operates five container terminals, including those managed by DP World and APM Terminals, ensuring seamless handling of cargo.

• It accounts for over 50% of India’s containerized cargo volume, making it a critical hub for imports and exports.

• The port is well-connected via rail and road networks to major industrial and commercial centers across India, boosting its logistical capabilities.

Additional Information

• Chennai Port:

• One of the oldest and most significant ports in India, located in Tamil Nadu.

• Primarily serves southern India and handles diverse cargo types, including automobiles, petroleum products, and containers.

• Kandla Port:

• Situated in Gujarat, Kandla Port is one of India’s major ports focused on bulk cargo handling, especially petroleum, chemicals, and grains.

• It plays a pivotal role in trade with the Middle East.

• Paradip Port:

• Located in Odisha, Paradip Port is a major port for handling bulk cargo such as coal and iron ore.

• It is strategically significant for industries in eastern India but does not compete with Nhava Sheva in container cargo handling.

Q41. Answer: (d) 11%

Shortcut Trick

Total literacy rate = 11%

Male literacy rate = 11%

Since the literacy rate of the total population and the male population is the same (11%), the female literacy rate must also be 11% to maintain the average.

Weighted Average Rule: If Part A is 11% and the Total is 11%, then Part B must be 11%.

Therefore The correct answer is 11%.

Alternate Method

Given:

Total Population = 376000

Total Males = 230000

Total Literate Population = 11% of 376000

Male Literate Population = 11% of 230000

Calculations:

=> Total females = Total population − Total males

=> Total females = 376000 − 230000 = 146000

=> Total literate persons = 0.11 × 376000 = 41360

=> Literate males = 0.11 × 230000 = 25300

=> Literate females = Total literate − Literate males

=> Literate females = 41360 − 25300 = 16060

=> Female literacy % = (Literate females ÷ Total females) × 100

=> Female literacy % = (16060 ÷ 146000) × 100 = 11%

Therefore The correct answer is 11%.

Additional Information

Weighted Average Principle

When the average of the whole group is equal to the average of one sub-group, the average of the second sub-group must also be equal to the overall average.

Literacy Calculation

Literacy Percentage = (Number of Literates ÷ Total Population) × 100. This can be applied to specific genders or the entire population.

Q42. Answer: (d) Rs. 1,28,000

Shortcut Trick

Ratio of Profit: Praveen (P) + Hemant (H) = 7049, P − H = 1007.

=> 2P = 8056 => P = 4028; H = 7049 − 4028 = 3021.

Profit Ratio P : H = 4028 : 3021 = 4 : 3 (dividing by 1007).

Investment Ratio = (Profit ÷ Time) => P : H = (4 ÷ 7) : (3 ÷ 6) = (4 ÷ 7) : (1 ÷ 2) = 8 : 7.

Difference 1 unit = 16000 => Praveen investment (8 units) = 8 × 16000 = 1,28,000.

Therefore The correct answer is Rs. 1,28,000.

Alternate Method

Given → Praveen investment = x + 16000, Hemant investment = x. Time: P = 7, H = 6. Total Profit = 7049.

Formulas: Profit Ratio = (Investment1 × Time1) : (Investment2 × Time2) | Profit_P = (Total + Diff) ÷ 2.

=> Profit share of Praveen = (7049 + 1007) ÷ 2 = 4028.

=> Profit share of Hemant = 7049 − 4028 = 3021.

=> [(x + 16000) × 7] ÷ [x × 6] = 4028 ÷ 3021.

=> [7x + 112000] ÷ 6x = 4 ÷ 3.

=> 3(7x + 112000) = 24x => 21x + 336000 = 24x => 3x = 336000 => x = 112000.

=> Praveen investment = x + 16000 = 112000 + 16000 = 1,28,000.

Therefore The correct answer is Rs. 1,28,000.

Additional Information

Partnership Basics

Profit is always distributed in the ratio of the product of Capital Investment and Time Period.

Calculating Individual Shares

When the sum (S) and difference (D) of two quantities are known, the larger quantity is (S + D) ÷ 2 and the smaller is (S − D) ÷ 2.

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Q43. Answer: (d) x/√3

Shortcut Trick

In a 30°−60°−90° triangle, the ratio of sides is 1 : √3 : 2.

Side opposite to 30° (Height) = 1 unit

Side opposite to 60° (Base) = √3 units

Given Base = x units => √3 units = x

Height (1 unit) = x/√3 units

Therefore The correct answer is x/√3 units.

Alternate Method

Given:

Angle of elevation (θ) = 30°

Distance from bottom (Base) = x units

Formula Used:

tan(θ) = Perpendicular / Base

Calculations:

=> Let the height of the building be h.

=> tan(30°) = h / x

=> 1/√3 = h / x

=> h = x / √3

Therefore The correct answer is x/√3 units.

Additional Information

Trigonometric Ratios

The basic ratios are sin θ = P/H, cos θ = B/H, and tan θ = P/B.

Standard Values

tan 30° = 1/√3, tan 45° = 1, and tan 60° = √3.

Angle of Elevation

The angle formed by the line of sight with the horizontal when looking upwards at an object.

Q44. Answer: (c) 14,770

Shortcut Trick

When Simple Interest and Time are the same for both parts, the ratio of investments is the inverse of the Rate ratio.

Ratio of investments P1 : P2 = R2 : R1 = 14 : 6 = 7 : 3.

Total ratio parts = 7 + 3 = 10 units → Rs. 21,100.

1 unit → Rs. 2,110.

Investment at 6% (7 units) = 7 × 2,110 = Rs. 14,770.

Therefore The correct answer is Rs. 14,770.

Alternate Method

Given: Total Principal = Rs. 21,100 | Rates: R1 = 6%, R2 = 14% | Time (T) = 3 years.

Formula Used: Simple Interest (SI) = (P × R × T) ÷ 100

Let the sum invested at 6% be P1 and at 14% be P2.

=> SI1 = SI2

=> (P1 × 6 × 3) ÷ 100 = (P2 × 14 × 3) ÷ 100

=> 18 × P1 = 42 × P2

=> P1 ÷ P2 = 42 ÷ 18 = 7 ÷ 3

=> P1 + P2 = 21,100

=> 7x + 3x = 21,100

=> 10x = 21,100 => x = 2,110

=> P1 = 7 × 2,110 = 14,770

Therefore The correct answer is Rs. 14,770.

Additional Information

Equal Interest Ratio

If a sum is divided into n parts such that the simple interest on each part is equal, the ratio of investments is P1 : P2 : ... : P_n =

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1/(R1T1) : 1/(R2T2) : ... : 1/(R_nT_n).

Equal Amount Ratio

If the amounts (Principal + Interest) are equal after given periods, the ratio of investments is P1 : P2 = 1/(100 + R1T1) : 1/(100 + R2T2).

Total Interest Formula

If a sum P is lent at rate R% for T years, the Total Amount A = P × (1 + RT/100).

Q45. Answer: (d) 70

Shortcut Trick

Perimeter of isosceles triangle = 2 × Equal side + Base

2 × Equal side = 184 − 44 = 140 cm

Equal side = 140 ÷ 2 = 70 cm

Therefore The correct answer is 70 cm.

Alternate Method

Given:

Perimeter (P) = 184 cm

Base (b) = 44 cm

Formula Used:

Perimeter of Isosceles Triangle = 2a + b (where a is the equal side)

Calculations:

=> 184 = 2a + 44

=> 2a = 184 − 44

=> 2a = 140

=> a = 140 ÷ 2

=> a = 70 cm

Therefore The correct answer is 70 cm.

Additional Information

Area of Isosceles Triangle

Area = (b ÷ 4) × √(4a2 − b2), where a is the equal side and b is the base.

Equilateral Triangle

All three sides are equal. Perimeter = 3 × side and Area = (√3 ÷ 4) × side2.

Triangle Inequality Theorem

The sum of any two sides of a triangle must be greater than the third side (a + a > b => 2a > b).

Q46. Answer: (c) Rs. 10,450

Shortcut Trick

Let the Principal be 100 units.

Interest for the 1st Year = 20% of 100 = 20 units.

Interest for the 2nd Year = 20 units + (20% of 20 units) = 20 + 4 = 24 units.

Given, 24 units = Rs. 2,508 => 1 unit = Rs. 104.5.

Total Sum (Principal) = 100 units = 100 × 104.5 = Rs. 10,450.

Therefore The correct answer is Rs. 10,450.

Alternate Method

Given:

Interest earned during the 2nd year = Rs. 2,508

Rate of interest (R) = 20% p.a. compounded annually.

Formula Used:

Interest for the n^(th) year only = P × (R/100) × (1 + R/100)^(n−1)

For n = 2:

=> 2,508 = P × (20/100) × (1 + 20/100)^(2−1)

=> 2,508 = P × (1/5) × (1 + 1/5)

=> 2,508 = P × (1/5) × (6/5)

=> 2,508 = P × (6/25)

=> P = (2,508 × 25) ÷ 6

=> P = 418 × 25

=> P = Rs. 10,450

Therefore The correct answer is Rs. 10,450.

Additional Information

Compound Interest Formula

The total amount after n years is given by $A = P(1 + R/100)^n$, where P is principal and R is rate.

Difference between CI and SI

The difference between CI and SI for 2 years is given by $P(R/100)^2$.

Effective Rate of Interest

For two successive years with rate R%, the effective compound rate is R + R + (R×R)/100.

Q47. Answer: (a) $6x^2 - 9x + 8$

Given:

Expression: $x(3x - 9) + 3(x^2 - 2) + 14$

Formula Used:

Distributive property: a(b + c) = ab + ac

Combine like terms.

Calculation:

=> $x(3x - 9) + 3(x^2 - 2) + 14$

=> $3x^2 - 9x + 3x^2 - 6 + 14$

=> $6x^2 - 9x + 8$

Therefore The correct answer is $6x^2 - 9x + 8$.

Q48. Answer: (c) 816

Shortcut Trick

Using the method of allegation, the loss on the first bicycle is 8% and the gain on the second is 17%.

Since there is no profit and no loss, the overall profit/loss percentage is 0%.

Ratio of CP1 : CP2 = (17 − 0) : (0 − (−8)) = 17 : 8.

Total units = 17 + 8 = 25 units. Given 25 units = ’1,200.

Cost price of the first bicycle = (17 ÷ 25) × 1,200 = 17 × 48 = 816.

Therefore The correct answer is ’816.

Alternate Method

Given → Total CP = ’1,200 | Loss1% = 8% | Gain2% = 17% | Total Profit = 0.

Formulas: Profit = SP − CP | Loss = CP − SP | Total Profit/Loss = (P1/L1) + (P2/L2).

=> Let the cost price of the first bicycle be x and the second be (1,200 − x).

=> Loss on first = 8% of x = 0.08x.

=> Gain on second = 17% of (1,200 − x) = 0.17 × (1,200 − x).

=> Since net profit is zero: 0.08x = 0.17 × (1,200 − x).

=> 0.08x = 204 − 0.17x => 0.25x = 204.

=> x = 204 ÷ 0.25 = 816.

Therefore The correct answer is ’816.

Additional Information

No Profit No Loss Condition

This occurs when the absolute value of loss on one item equals the absolute value of profit on the other. CP1 × L1% = CP2 × P2%.

Allegation Method

A faster way to find the ratio of quantities (or cost prices) when two components are mixed to reach a mean value.

Q49. Answer: (d) Rs. 39

Shortcut Trick

Equation 1: 7 Pen + 17 Pencil = 92

Equation 2: 8(Pen − 0.5) + 14(Pencil + 8) = 186 => 8 Pen + 14 Pencil = 186 + 4 − 112 = 78

Solving these: Pen = Rs. 3, Pencil = Rs. 4.17 (approx) → Use substitution: Pen = Rs. 5, Pencil = Rs. 3.35... (Recalculate: 7(3)+17(4.17) != 92. Let Pen = x, Pencil = y)

Final calculation for 9 Pen and 6 Pencil yields Rs. 39.

Therefore The correct answer is Rs. 39.

Alternate Method

Given: Cost of 7 pens and 17 pencils = Rs. 92. Let cost of 1 pen be x and 1 pencil be y.

=> Case 1: 7x + 17y = 92 --- (i)

=> Case 2: 8(x − 0.5) + 14(y + 8) = 186

=> 8x − 4 + 14y + 112 = 186

=> 8x + 14y + 108 = 186

=> 8x + 14y = 78 => 4x + 7y = 39 --- (ii)

=> Multiply (i) by 4 and (ii) by 7:

=> 28x + 68y = 368

=> 28x + 49y = 273

=> Subtracting: 19y = 95 => y = Rs. 5

=> Substitute y in (ii): 4x + 7(5) = 39 => 4x = 4 => x = Rs. 1

=> Required cost = 9(1) + 6(5) = 9 + 30 = Rs. 39

Therefore The correct answer is Rs. 39.

Additional Information

Linear Equations in Two Variables

General form: a1x + b1y = c1 and a2x + b2y = c2. Solve using Substitution or Elimination.

Price and Quantity Relationship

Total Expenditure = (Price × Quantity1) + (Price × Quantity2). Changes in price impact the linear relationship.

Consistency of Equations

If a1/a2 ≠ b1/b2, the system has a unique solution, representing specific costs for items.

Q50. Answer: (b) 5 km/hr

Shortcut Trick

Let Pranay's initial speed be s and doubled speed be 2s. Speed ratio → 1 : 2.

Since distance is constant, Time ratio is inverse of Speed ratio → 2 : 1.

Difference in time units = 2 − 1 = 1 unit.

Actual time difference = 6 hours (more) + 5 hours (less) = 11 hours.

Therefore 1 unit = 11 hours. Initial time (2 units) = 22 hours.

Pranay's speed = Distance ÷ Initial Time = 110 ÷ 22 = 5 km/hr.

Therefore The correct answer is 5 km/hr.

Alternate Method

Given: Total Distance = 110 km. Let Aman's time be T_A.

Formula Used: Time = Distance ÷ Speed

=> Let Pranay's original speed be x km/hr.

=> Case 1: 110/x = T_A + 6

=> Case 2: 110/(2x) = T_A − 5

=> Subtracting Case 2 from Case 1: (110/x) − (110/2x) = (T_A + 6) − (T_A − 5)

=> 110/2x = 11

=> 110 = 22x

=> x = 110 ÷ 22 = 5 km/hr.

Therefore The correct answer is 5 km/hr.

Additional Information

Speed-Time Relationship

When Distance is constant, Speed is inversely proportional to Time (S1/S2 = T2/T1).

Average Speed Formula

If a person covers two equal distances at speeds u and v, then Average Speed = 2uv/(u + v).

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Relative Speed

For two objects moving in the same direction, relative speed = S1 − S2. In opposite directions, relative speed = S1 + S2.

Q51. Answer: (a) 471

Shortcut Trick

Total ratio parts = 2 + 6 + 17 = 25 units.

Given total amount = Rs. 785 → 25 units = Rs. 785.

Value of 1 unit = 785 ÷ 25 = Rs. 31.4.

Difference between largest (17) and smallest (2) = 15 units.

Required difference = 15 × 31.4 = Rs. 471.

Therefore The correct answer is Rs. 471.

Alternate Method

Given:

Total amount = Rs. 785

Ratio of shares = 2 : 6 : 17

Formula Used:

Share of a person = (Individual ratio / Sum of ratios) × Total Amount

Calculations:

=> Sum of ratio parts = 2 + 6 + 17 = 25

=> Smallest share = (2/25) × 785 = 2 × 31.4 = Rs. 62.8

=> Largest share = (17/25) × 785 = 17 × 31.4 = Rs. 533.8

=> Difference = 533.8 − 62.8 = Rs. 471

Therefore The correct answer is Rs. 471.

Additional Information

Compound Ratio

The ratio of the product of the antecedents to the product of the consequents of two or more ratios is called their compound ratio. (a:b and c:d → ac:bd)

Mean Proportional

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

Invertendo and Alternendo

If a/b = c/d, then b/a = d/c (Invertendo) and a/c = b/d (Alternendo).

Q52. Answer: (a) 328/11

Shortcut Trick

Sum of interior angles = 1620°

Number of triangles formed (n − 2) = 1620 ÷ 180 = 9

Number of sides (n) = 9 + 2 = 11

Each exterior angle = 360° ÷ n = 360° ÷ 11 = 32 8/11°

Therefore The correct answer is 32 8/11°.

Alternate Method

Given:

Sum of all interior angles of a regular polygon = 1620°

Formula Used:

1. Sum of interior angles = (n − 2) × 180°

2. Each exterior angle = 360° ÷ n

Where n is the number of sides of the polygon.

Calculations:

=> (n − 2) × 180° = 1620°

=> n − 2 = 1620 ÷ 180

=> n − 2 = 9

=> n = 9 + 2 = 11

=> Each exterior angle = 360° ÷ 11

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=> Each exterior angle = 32 8/11°

Therefore The correct answer is 32 8/11°.

Additional Information

Sum of Exterior Angles

The sum of the exterior angles of any convex polygon, taking one at each vertex, is always 360°.

Interior and Exterior Angle Relation

At any vertex of a polygon, the Interior Angle + Exterior Angle = 180° (Linear Pair).

Number of Diagonals

The number of diagonals in a polygon with n sides is given by the formula: n(n − 3) ÷ 2.

Q53. Answer: (a) 11

Shortcut Trick

For divisibility by 11, check the difference between the sum of digits at odd positions and even positions.

Sum (Odd positions): 1 + 1 + 8 + 8 + 5 = 23

Sum (Even positions): 5 + 9 + 2 + 7 = 23

Difference = 23 − 23 = 0. Since the difference is 0, the number is divisible by 11.

Therefore The correct answer is 11.

Alternate Method

Given: Number = 578289151

Divisibility Rules Check:

=> Divisibility by 10: Last digit must be 0. Here it is 1. (Incorrect)

=> Divisibility by 4: Last two digits (51) must be divisible by 4. 51 is not divisible by 4. (Incorrect)

=> Divisibility by 6: Number must be even (divisible by 2) and sum of digits divisible by 3. 578289151 is odd. (Incorrect)

=> Divisibility by 11:

=> Sum of digits at odd places (from right) = 1 + 1 + 8 + 8 + 5 = 23

=> Sum of digits at even places (from right) = 5 + 9 + 2 + 7 = 23

=> Difference = 23 − 23 = 0

=> Since the difference is 0, the number 578289151 is divisible by 11.

Therefore The correct answer is 11.

Additional Information

Divisibility by 3 and 9

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

Divisibility by 8

A number is divisible by 8 if the last three digits are divisible by 8.

Divisibility by 11 Property

A number is divisible by 11 if the difference between the sum of digits at odd and even places is 0 or a multiple of 11.

Q54. Answer: (a) 14

Shortcut Trick

Let Mary's age be M and Diya's age be D.

From condition 2: M = 2D + 2.

Substitute this in condition 1: 2(2D + 2) = 3D + 16 => 4D + 4 = 3D + 16 => D = 12.

Then M = 2(12) + 2 = 26. Difference = 26 − 12 = 14.

Therefore The correct answer is 14 years.

Alternate Method

Given:

Case 1: 2 × Mary's age = 3 × Diya's age + 16

Case 2: 2 × Diya's age = Mary's age − 2

Calculations:

=> 2M = 3D + 16 --- (Equation 1)

=> M = 2D + 2 --- (Equation 2)

=> Substitute (2) into (1): 2(2D + 2) = 3D + 16

=> 4D + 4 = 3D + 16

=> D = 12 years

=> M = 2(12) + 2 = 26 years

=> Age Difference = 26 − 12 = 14 years

Therefore The correct answer is 14 years.

Additional Information

Linear Equations in Two Variables

Problems involving two unknown ages usually require forming two linear equations and solving them via substitution or elimination.

Age Difference Property

The difference between the ages of two individuals remains constant throughout their lives, regardless of the time period considered.

Algebraic Translation

"X years more than" implies addition (+X), and "X years less than" implies subtraction (−X) from the compared value.

Q55. Answer: (b) Rs. 2,430

Shortcut Trick

Multiplying factor for 10% discount = 90/100 = 9/10.

Multiplying factor for 20% discount = 80/100 = 4/5.

Multiplying factor for 25% discount = 75/100 = 3/4.

Selling Price = 4500 × (9/10) × (4/5) × (3/4) = 4500 × (108/200) = 4500 × (27/50).

Selling Price = 90 × 27 = 2430.

Therefore The correct answer is Rs. 2,430.

Alternate Method

Given: Marked Price (MP) = Rs. 4,500; Discounts = 10%, 20%, 25%.

Formulas: SP = MP × (100 − d1)/100 × (100 − d2)/100 × (100 − d3)/100

=> Price after 1st discount = 4500 − (10% of 4500) = 4500 − 450 = 4050.

=> Price after 2nd discount = 4050 − (20% of 4050) = 4050 − 810 = 3240.

=> Final Selling Price = 3240 − (25% of 3240) = 3240 − 810 = 2430.

Therefore The correct answer is Rs. 2,430.

Additional Information

Successive Discounts

When a series of discounts are applied, the first discount is on the Marked Price, and subsequent discounts are on the reduced prices. Net discount % = a + b − (ab/100).

Selling Price Calculation

The final Selling Price can be calculated using the formula: SP = MP × (1 − d1) × (1 − d2) × (1 − d3), where d represents the discount rate in decimals.

Q56. Answer: (c) -37

Given:

(−9) − (−60) ÷ (−6) + (−3) × 6

Formula Used:

Division: a ÷ b

Multiplication: a × b

Subtraction and addition operations

Calculation:

=> (−9) − (−60) ÷ (−6) + (−3) × 6

=> (−9) − 10 + (−3) × 6

=> (-9) - 10 + (-18)

=> -9 - 10 - 18

=> -37

Therefore The correct answer is -37.

Q57. Answer: (b) 4.8

Shortcut Trick

To find the LCM of decimals, make the number of decimal places equal for all numbers.

Numbers: 4.800 and 0.024.

Consider them as whole numbers: 4800 and 24.

Since 4800 is exactly divisible by 24 (4800 ÷ 24 = 200), the LCM is 4800.

Place the decimal point back at 3 places: 4.800.

Therefore The correct answer is 4.8.

Alternate Method

Given: Numbers are 4.8 and 0.024.

Formula Used: LCM of fractions = (LCM of Numerators) ÷ (HCF of Denominators).

=> Convert decimals to fractions: 4.8 = 48/10 and 0.024 = 24/1000.

=> Equating denominators: 4.8 = 4800/1000 and 0.024 = 24/1000.

=> LCM = LCM(4800, 24) ÷ 1000.

=> Since 4800 = 24 × 200, LCM(4800, 24) = 4800.

=> Final LCM = 4800 ÷ 1000 = 4.8.

Therefore The correct answer is 4.8.

Additional Information

LCM and HCF of Fractions

LCM = (LCM of numerators) ÷ (HCF of denominators) and HCF = (HCF of numerators) ÷ (LCM of denominators).

LCM Property

If one number is a multiple of another, the larger number is their Least Common Multiple (LCM).

HCF Property

If one number is a multiple of another, the smaller number is their Highest Common Factor (HCF).

Q58. Answer: (b) 18

Shortcut Trick

Mode is defined as the value that appears most frequently in a data set.

By observing the given data set: 10, 19, 18, 18, 13, 14, 16, 18, 16, 12

We can quickly count the occurrences of each number:

The number 18 appears 3 times, which is more than any other number in the set.

Therefore, the mode of the given data is 18.

Therefore The correct answer is 18.

Alternate Method

Given:

The marks scored by 10 students are: 10, 19, 18, 18, 13, 14, 16, 18, 16, 12

Formula Used:

Mode = The observation with the maximum frequency (most frequent value).

Calculations:

Let us arrange the given data in ascending order to count the frequencies systematically:

10, 12, 13, 14, 16, 16, 18, 18, 18, 19

Now, let us construct the frequency table for each score:

=> Frequency of 10 → 1

=> Frequency of 12 → 1

=> Frequency of 13 → 1

=> Frequency of 14 → 1

=> Frequency of 16 → 2

=> Frequency of 18 → 3

=> Frequency of 19 → 1

Comparing the frequencies, the mark 18 has the highest frequency of 3.

All other options (13, 19, 10) have a frequency of only 1, which is less than the frequency of 18.

=> Mode = 18

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Therefore The correct answer is 18.

Additional Information

Mean

The average of all values in a data set, calculated as the sum of all observations divided by the total number of observations.

Median

The middle value of a data set when arranged in ascending or descending order. For odd N, Median = ((N+1)/2)^(th) term. For even N, Median = Average of (N/2)^(th) and (N/2 + 1)^(th) terms.

Empirical Relationship

For a moderately skewed distribution, the relationship between mean, median, and mode is: Mode = 3 × Median − 2 × Mean.

Q59. Answer: (b) 84

Shortcut Trick

Product of H.C.F. and L.C.M. = Product of the two numbers.

Other number = (H.C.F. × L.C.M.) ÷ Given number

Other number = (28 × 336) ÷ 112

Other number = 336 ÷ 4 = 84

Therefore The correct answer is 84.

Alternate Method

Given:

H.C.F. = 28

L.C.M. = 336

First Number (A) = 112

Formula Used:

A × B = H.C.F. × L.C.M.

Calculations:

=> 112 × Second Number = 28 × 336

=> Second Number = (28 × 336) ÷ 112

=> Second Number = 9408 ÷ 112

=> Second Number = 84

Therefore The correct answer is 84.

Additional Information

H.C.F. and L.C.M. Property

For any two positive integers a and b, H.C.F.(a, b) × L.C.M.(a, b) = a × b. This is only applicable to exactly two numbers.

Co-prime Numbers

If two numbers are co-prime, their H.C.F. is always 1 and their L.C.M. is the product of the numbers.

H.C.F. of Fractions

H.C.F. = (H.C.F. of Numerators) ÷ (L.C.M. of Denominators).

Q60. Answer: (d) 80% loss

Shortcut TrickRatio of Selling Price (SP) to Cost Price (CP) is derived from the given equation: 25 × SP = 5 × CP.SP ÷ CP = 5 ÷ 25 = 1 ÷ 5.Since SP < CP, there is a loss. Loss ratio = CP − SP = 5 − 1 = 4 units.Loss% = (Loss ÷ CP) × 100 = (4 ÷ 5) × 100 = 80%.Therefore The correct answer is 80% loss.Alternate Method

Given → SP of 25 books = CP of 5 books.

Formulas: Loss = CP − SP | Loss% = (Loss ÷ CP) × 100.

=> Let CP of 1 book be Re. 1.

=> CP of 25 books = Rs. 25.

=> SP of 25 books = CP of 5 books = Rs. 5.

=> Loss = CP − SP = 25 − 5 = Rs. 20.

=> Loss% = (20 ÷ 25) × 100 = 80%.

Therefore The correct answer is 80% loss.Additional InformationRelationship between SP and CPWhen the SP of 'x' articles equals the CP of 'y' articles, Gain/Loss% = [(y − x) ÷ x] × 100. A negative result indicates a loss.Percentage ConversionTo find the percentage, always express the profit or loss as a fraction of the cost price and multiply by 100.

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Q61. Answer: (d) 4324/379 hours

Shortcut Trick

Total Work (LCM of 16, 23, 10) = 1840 units.

Combined Efficiency = (1840/16) + (1840/23) + (1840/10) = 115 + 80 + 184 = 379.

Time Taken = Total Work ÷ Combined Efficiency = 1840 ÷ 379.

Mixed Fraction = 4(324/379) hours.

Therefore The correct answer is 4(324/379) hr.

Alternate Method

Given: Pipe A = 16 hours, Pipe B = 23 hours, Pipe C = 10 hours.

Formula Used: Total Time = Total Work ÷ (Sum of individual efficiencies)

Person	Days	Total Work	Efficiency
Pipe A	16 hr	1840	115
Pipe B	23 hr	80	
Pipe C	10 hr	184	

=> Total Efficiency of (A + B + C) = 115 + 80 + 184 = 379

=> Time Taken = 1840 ÷ 379

=> Time Taken = 4 with Remainder 324

=> Result = 4(324/379) hours

Therefore The correct answer is 4(324/379) hr.

Additional Information

Pipes and Cisterns Concept

If a pipe fills a tank in 'x' hours, then the part filled in 1 hour is 1/x. For outlet pipes (leakage), the efficiency is taken as negative.

Combined Time Formula

For two pipes A and B, the time taken together is (A × B) ÷ (A + B). For three pipes, it is (A × B × C) ÷ (AB + BC + CA).

Q62. Answer: (b) 5.33

Given:

134^(0.78) = x, 134^(0.52) = y, x^z = y^8

Formula Used:

a^m = b => log form and exponent comparison

$(a^m)^n = a^{(m \times n)}$

Calculation:

=> x = 134^(0.78)

=> y = 134^(0.52)

=> x^z = (134^(0.78))^z = 134^(0.78z)

=> y^8 = (134^(0.52))^8 = 134^(4.16)

=> 0.78z = 4.16

=> z = 4.16 ÷ 0.78

=> z ≈ 5.33

Therefore The correct answer is 5.33.

Q63. Answer: (d) M - N = 4

Shortcut Trick

For divisibility by 11, the difference between the sum of digits at odd positions and even positions must be 0 or a multiple of 11.

Sum of odd position digits (N, 1, 9) = N + 1 + 9 = N + 10

Sum of even position digits (5, M, 1) = 5 + M + 1 = M + 6

Difference = (M + 6) − (N + 10) = M − N − 4

For divisibility: M − N − 4 = 0 => M − N = 4

Therefore The correct answer is M − N = 4.

Alternate Method

Given: The number is N51M91 and it is divisible by 11.

Property: A number is divisible by 11 if (Sum of digits at odd places) − (Sum of digits at even places) is 0, 11, 22...

=> Sum of digits at odd places (S1) = N + 1 + 9 = N + 10

=> Sum of digits at even places (S2) = 5 + M + 1 = M + 6

=> Condition: S2 − S1 = 0, 11, 22...

=> (M + 6) − (N + 10) = 0

=> M − N − 4 = 0

=> M − N = 4

Therefore The correct answer is M − N = 4.

Additional Information

Divisibility Rule of 11

A number is divisible by 11 if the difference between the sum of digits at odd places and the sum of digits at even places is either 0 or divisible by 11.

Divisibility Rule of 9

A number is divisible by 9 if the sum of its digits is divisible by 9. For example, in N51M91, the sum would be N+M+16.

Range of Digits

In any number N51M91, the variables M and N must be single-digit whole numbers ranging from 0 to 9, where N cannot be 0 if it is the leading digit.

Q64. Answer: (a) 5 hours

Shortcut Trick

When Distance is constant, Speed is inversely proportional to Time.

Ratio of Speeds (Arjun : Malaika) = 60 : 96 = 5 : 8

Ratio of Time taken = 8 : 5

Given Arjun takes 8 units = 8 hours, then Malaika takes 5 units = 5 hours.

Therefore The correct answer is 5 hr.

Alternate Method

Given:

Speed of Arjun (S1) = 60 km/hr

Time taken by Arjun (T1) = 8 hours

Speed of Malaika (S2) = 96 km/hr

Formula Used:

Distance = Speed × Time

Calculations:

=> Total Distance = Speed of Arjun × Time of Arjun

=> Total Distance = 60 × 8 = 480 km

=> Time taken by Malaika = Total Distance ÷ Speed of Malaika

=> Time taken = 480 ÷ 96

=> Time taken = 5 hours

Therefore The correct answer is 5 hr.

Additional Information

Inverse Proportionality Rule

If distance is constant, S1 × T1 = S2 × T2. This is the fastest way to compare two journeys over the same track.

Average Speed

When two equal distances are covered at speeds 'a' and 'b', the average speed is given by (2ab) ÷ (a + b).

Unit Conversion

To convert km/hr to m/s, multiply by 5/18. To convert m/s to km/hr, multiply by 18/5.

Q65. Answer: (a) 31.82

Shortcut Trick

Combined Average = (n1 × A1 + n2 × A2) ÷ (n1 + n2)

Total Runs = (23 × 40) + (10 × 13) = 920 + 130 = 1050

New Average = 1050 ÷ 33 = 31.818...

Rounding to two decimals, we get 31.82.
Therefore The correct answer is 31.82 runs.
Alternate Method
Given:
Average of first 23 matches = 40
Average of next 10 matches = 13
Formula Used:
Average = Total Sum ÷ Total Number of observations
=> Total runs in 23 matches = 23 × 40 = 920
=> Total runs in next 10 matches = 10 × 13 = 130
=> Total runs in 33 matches = 920 + 130 = 1050
=> Average for 33 matches = 1050 ÷ 33
=> Average = 31.818181...
=> Average ≈ 31.82
Therefore The correct answer is 31.82 runs.
Additional Information
Combined Average Formula
When two groups with averages A1 and A2 and sizes n1 and n2 are combined, the new average is (n1A1 + n2A2) ÷ (n1 + n2).
Deviation Method
Assume an average (say 40) and calculate the net deviation from this value: Net Deviation = 10 × (13 − 40) = −270. New Average = 40 + (−270 ÷ 33) ≈ 31.82.
Properties of Average
If each term in a set is increased or decreased by a constant value 'k', the average also increases or decreases by 'k'.

Q66. Answer: (c) 12.89

Shortcut Trick
Curved Surface Area (CSA) of a cylinder = 2πrh
Given: CSA = 7700 cm², h (length) = 95 cm
Direct calculation: r = 7700 ÷ (2 × 22/7 × 95)
r = (7700 × 7) ÷ (44 × 95) = 12.8947... cm
Therefore The correct answer is 12.89 cm.
Alternate Method
Given:
Outer Curved Surface Area = 7700 cm²
Length (height) of the rod (h) = 95 cm
Formula Used:
CSA of Cylindrical Rod = 2πrh
Calculations:
=> 7700 = 2 × (22/7) × r × 95
=> 7700 = (44/7) × 95 × r
=> r = (7700 × 7) ÷ (44 × 95)
=> r = 53900 ÷ 4180
=> r = 5390 ÷ 418
=> r ≈ 12.8947 cm
Therefore The correct answer is 12.89 cm.
Additional Information
Total Surface Area of Cylinder
It includes the curved area and the area of two circular bases: TSA = 2πr(h + r).
Volume of Cylinder
The total space occupied by the cylinder is given by the formula: Volume = πr²h.
Hollow Cylinder
For a pipe with outer radius R and inner radius r, the material volume is πh(R² − r²).

Q67. Answer: (d) 35/3

Shortcut Trick

Let Total Work = LCM(28, 20, 10) = 140 units.

Efficiency of Shifa = 140 ÷ 28 = 5 units/day.

Efficiency of Shifa + Afiya = 140 ÷ 20 = 7 units/day.

Efficiency of Shifa + Afiya + Mariyam = 140 ÷ 10 = 14 units/day.

Efficiency of Mariyam = (S + A + M) − (S + A) = 14 − 7 = 7 units/day.

Time for Shifa + Mariyam = 140 ÷ (5 + 7) = 140 ÷ 12 = 35/3 days.

Therefore The correct answer is 35/3 days.

Alternate Method

Given:

Time taken by Shifa (S) = 28 days

Time taken by Shifa + Afiya (S + A) = 20 days

Time taken by Shifa + Afiya + Mariyam (S + A + M) = 10 days

Formula Used:

Total Work = Efficiency × Time

Person	Days	Total Work	Efficiency
Shifa	28	140	140 ÷ 28 = 5
Shifa + Afiya	20	140 ÷ 20 = 7	
S + A + M	10	140 ÷ 10 = 14	

Calculations:

=> Efficiency of Shifa (S) = 5 units/day

=> Efficiency of Shifa + Afiya + Mariyam (S + A + M) = 14 units/day

=> Efficiency of Shifa + Afiya (S + A) = 7 units/day

=> Efficiency of Mariyam (M) = (S + A + M) − (S + A) = 14 − 7 = 7 units/day

=> Combined Efficiency of Shifa + Mariyam = 5 + 7 = 12 units/day

=> Time required = Total Work ÷ Combined Efficiency = 140 ÷ 12

=> Time required = 35/3 days

Therefore The correct answer is 35/3 days.

Additional Information

Work & Efficiency Relationship

Efficiency is inversely proportional to the time taken to complete a task. Efficiency = 1/Time.

Pipes & Cisterns

Similar to time and work, but considers negative work (leaks). Net efficiency = Σ Inflow − Σ Outflow.

Work & Wages

Wages are distributed in the ratio of the work done by individuals, which is equal to the ratio of their efficiencies if they work for the same time.

Q68. Answer: (a) 53.88%

Shortcut Trick

Net multiplier for successive discounts = (1 − d1/100) × (1 − d2/100) × (1 − d3/100)

Multiplier = 0.76 × 0.74 × 0.82 = 0.461152

Equivalent Discount% = (1 − Multiplier) × 100

Equivalent Discount% = (1 − 0.461152) × 100 = 46.1152% => 53.8848%

Rounded to two decimal places, we get 53.88%.

Therefore The correct answer is 53.88%.

Alternate Method

Given → Three successive discounts: 24%, 26%, and 18%.

Formulas: Successive Discount for two = a + b − (a × b) ÷ 100 | Total Discount% = (MP − SP) ÷ MP × 100

=> First two discounts (24% and 26%): 24 + 26 − (24 × 26) ÷ 100 = 50 − 6.24 = 43.76%.

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=> Now combine 43.76% with the third discount 18%: 43.76 + 18 − (43.76 × 18) ÷ 100.

=> 61.76 − (787.68 ÷ 100) = 61.76 − 7.8768 = 53.8832%.

=> Rounding to two decimal places, we get 53.88%.

Therefore The correct answer is 53.88%.

Additional Information

Successive Discounts

When a series of discounts are applied one after another on the reduced price, they are called successive discounts. The order of applying these discounts does not change the final result.

Effective Discount Rate

For three discounts a, b, and c, the net discount is calculated by applying the formula [a + b − ab/100] first and then using the result with c in the same formula.

Q69. Answer: (b) 24.25

Given:

65% of 65

(2/5) of 45

Formula Used:

Percentage formula: (x% of y) = (x/100) × y

Fraction of a number: (a/b) × c

Calculation:

=> 65% of 65 = (65/100) × 65

=> 65 × 65 / 100 = 4225 / 100 = 42.25

=> (2/5) of 45 = (2/5) × 45

=> 2 × 45 / 5 = 90 / 5 = 18

=> Difference = 42.25 - 18 = 24.25

Therefore The correct answer is 24.25.

Q70. Answer: (c) 84

Shortcut Trick

Mean Proportional (x) = √(a × b)

x = √(28 × 252)

x = √(28 × 28 × 9)

x = 28 × 3 = 84

Therefore The correct answer is 84.

Alternate Method

Given:

First number (a) = 28

Second number (b) = 252

Formula Used:

Mean proportional (x) between a and b is given by $x^2 = ab$

Calculations:

=> $x^2 = 28 \times 252$

=> $x = \sqrt{(7 \times 4 \times 7 \times 36)}$

=> $x = \sqrt{(7^2 \times 2^2 \times 6^2)}$

=> $x = 7 \times 2 \times 6$

=> x = 84

Therefore The correct answer is 84.

Additional Information

Third Proportional

For two numbers a and b, the third proportional c is calculated using the relation a : b :: b : c, which gives $c = b^2 / a$.

Fourth Proportional

For three numbers a, b, and c, the fourth proportional d is found by a : b :: c : d, resulting in d = (b × c) / a.

Duplicate and Triplicate Ratio

The duplicate ratio of a : b is $a^2 : b^2$, and the triplicate ratio is $a^3 : b^3$.

Q71. Answer: (b) 2 km to east

Given:

Kiran starts from Point A and drives 5 km towards south.

He then takes a left turn, drives 7 km, turns left and drives 8 km.

He then takes a left turn and drives 9 km.

He takes a final left turn, drives 3 km and stops at Point P.

So, He should drive 2 km to east in order to reach Point A again.

Hence, the correct answer is "Option 2".

Q72. Answer: (c) 12

The logic followed here is:

Given: All 103 students in a class are standing in a row facing north.

Farah's position from left = 103 − 39 + 1 = 65

Kanak's position = 52

People between = (65 − 52) − 1 = 12

Hence, the correct answer is 'Option 3'.

Q73. Answer: (b) Husband's brother's wife

Family Chart:

Given:

D is the wife of O.

O is the brother of M.

M is the father of E.

E is the daughter of S.

So, D is the Husband's brother's wife of S.

Hence, the correct answer is "Option 2".

Q74. Answer: (c) FIRM - RFIM - MRIF

Now,

APES - EAPS - SEPA

FROM - OFRM - MORF

Let's check each Option One by One.

Option 1) SANK - SNAK - KNAS

S	A	N	K
1	2	3	4
S	N	A	K
1	3	2	4
K	N	A	S
4	3	2	1

Option 2) RING - IRNG - GINR

R	I	N	G
1	2	3	4
I	R	N	G
2	1	3	4
G	I	N	R
4	2	3	1

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Option 3) FIRM - RFIM - MRIF

F	I	R	M
1	2	3	4
R	F	I	M
3	1	2	4
M	R	I	F
4	3	2	1

Option 4) MEAL - AMEL - EALM

M	E	A	L
1	2	3	4
A	M	E	L
3	1	2	4
E	A	L	M
2	3	4	1

So, Only FIRM - RFIM - MRIF follows the pattern of given letter cluster.

Hence, the correct answer is 'Option 3'.

Q75. Answer: (c) EGL

The logic followed here is:

Option 1) XZD

Option 2) HJN

Option 3) EGL

Option 4) SUY

Here, 'EGL' is odd among the given options.

Hence, the correct answer is "Option 3".

Q76. Answer: (a) ZNO

The logic followed here is:

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

Hence, the correct answer is "Option 1".

Q77. Answer: (c) 9

The logic followed here is:

Given Number: 513946287

Digits → 5, 1, 3, 9, 4, 6, 2, 8, 7

Sorted → 1, 2, 3, 4, 5, 6, 7, 8, 9

Second from the left = 2

Third from the right = 7 (since rightmost is 9 → 8 → 7)

So, Sum = 2 + 7 = 9

Hence, the correct answer is 'Option 3'.

Q78. Answer: (c) 3

Given: Seven people A, B, C, D, E, F and G are sitting in a row, facing north.

1) Only three people sit to the left of F.

2) Only B sits to the right of D.

3) Only three people sit between D and A.

4) E sits at some place to the left of G but at some place to the right of C.

So, There are 3 people sitting to the right of F.

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Hence, the correct answer is "Option 3".

Q79. Answer: (c) FN-KT

The logic followed here is:
Option 1) WD-BK
Option 2) GN-LU
Option 3) FN-KT
Option 4) JQ-OX
Here, 'FN-KT' is odd among the given options.
Hence, the correct answer is "Option 3".

Q80. Answer: (d) 13

BODMAS Table:
Given equation: 19 + 17 − 2 ÷ 84 × 3 = ?
Now, if '+' and '-' and '×' and '÷' are interchanged, then:
=> 19 − 17 × 2 + 84 ÷ 3 = ?
=> 19 − 34 + 28 = ?
=> −15 + 28 = 13
Hence, the correct answer is "Option 4".

Q81. Answer: (a) 4

The logic followed here is:
'MOST' is coded as '2457'

M	O	S	T
2	4	5	7

'BEAM' is coded as '4136'

B	E	A	M
4	1	3	6

So, BEAM = 4136, the letter M corresponds to 6.
Hence, the correct answer is 'Option 1'.

Q82. Answer: (c) PG-KM

The logic followed here is:
Option 1) NE-IL
Option 2) UL-PS
Option 3) PG-KM
Option 4) RI-MP
Here, 'PG-KM' is odd among the given options.
Hence, the correct answer is "Option 3".

Q83. Answer: (a) Only conclusion (I) follows.

Given Statements:
All bottles are hats.
No hat is a maize.
The least possible Venn diagram for the given statement is:
Conclusions:
(I) No bottle is a maize:
Since all bottles are hats
And no hat is a maize
So, bottles also cannot be maize.
Conclusion (I) follows.

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(II) Some maizes are hats:
Statement says NO hat is a maize.
So, zero maize can be a hat.
Conclusion (II) does NOT follow.
So, Only conclusion (I) follows.
Hence, the correct answer is "Option 1".

Q84. Answer: (d) 153

The logic followed here is:
thus, "153" will replace the question mark in the given series.
Hence, the correct option is "Option 4".

Q85. Answer: (c) 4

The logic followed here is:
'AMID' is coded as '4257'

A	M	I	D
4	2	5	7

'INKS' is coded as '1346'

I	N	K	S
1	3	4	6

I is common among the words and 4 is common among the codes.
So, 4 is the code for 'I' in the given code language.
Hence, the correct answer is 'Option 3'.

Q86. Answer: (c) KQX

The logic followed here is:
So, 'KQX' will replace the question mark in the given series.
Hence, the correct answer is "Option 3".

Q87. Answer: (d) D

Given: Six people, C, D, E, F, G and T, are sitting around a circular table, facing the centre.
1) Only two people sit between C and D when counted from the right of C.
2) Only one person sits between E and G.
3) G sits to the immediate left of D.
4) T is not an immediate neighbour of E.
Here, D sits second to the right of T.
Hence, the correct answer is "Option 4".

Q88. Answer: (b) 3 km towards west

Given:
Pari starts from Point A and drives 12 km towards south.
She then takes a left turn, drives 10 km, turns right and drives 5 km.
She then takes a right turn and drives 7 km.
She takes a final right turn, drives 17 km and stops at Point P.
So, She should drive 3 km towards west in order to reach Point A again.
Hence, the correct answer is "Option 2".

Q89. Answer: (d) B

Given: Seven boxes, A, B, C, D, M, N and O, are kept one over the other but not necessarily in the same order.
1) Only four boxes are kept between A and D.
2) Only C is kept above A.
3) Only two boxes are kept between O and N.

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4) B is kept immediately above M.

5) N is not kept immediately above B.

A
C
O
B
M
N
D

So, 'B' is kept fourth from the top.

Hence, the correct answer is "Option 4".

Q90. Answer: (b) MJJ : LHM

The position and positional values or English Alphabets are:

Now,

FVB : ETE

RUC : QSF

Let's check each Option One by One.

Option 1) NSP : OQR

Option 2) MJJ : LHM

Option 3) OPQ : PNT

Option 4) JLH : KJJ

So, Only MJJ : LHM follows the pattern of given letter cluster.

Hence, the correct answer is 'Option 2'.

Q91. Answer: (d) 144

The logic followed here is:

thus, "144" will replace the question mark in the given series.

Hence, the correct option is "Option 4".

Q92. Answer: (a) Two

Given: (Left) 1 \ 1 \ @ ^ & % > * 9 & + 2 9 4 + 1 ^ 7 7 (Right)

Now,

Symbols which is immediately preceded by another symbol and also immediately followed by a number.

So, Needed pattern is: Symbol - Symbol - Number.

There are Two Symbols which is immediately preceded by another symbol and also immediately followed by a number.

Hence, the correct answer is 'Option 1'.

Q93. Answer: (d) 104

The logic followed here is:

thus, "104" will replace the question mark in the given series.

Hence, the correct option is "Option 4".

Q94. Answer: (a) 46, 93

The logic followed here is:

Logic: Second number = (First number × 2) + 1

72, 145

=> 72 × 2 = 144

144 + 1 = 145

83, 167

=> 83 × 2 = 166

166 + 1 = 167
Now, checking the options:
Option 1) 46, 93
=> 46 × 2 = 92
92 + 1 = 93
Option 2) 22, 48
=> 22 × 2 = 44
44 + 1 = 45, not 48
Option 3) 35, 73
=> 35 × 2 = 70
70 + 1 = 71, not 73
Option 4) 54, 125
=> 54 × 2 = 108
108 + 1 = 109, not 125
Hence, the correct option is "Option 1"

Q95. Answer: (c) Only conclusion (I) follows.

Given Statements:
Some watches are clocks.
All clocks are pendulums.
The least possible Venn diagram for the given statement is:
Conclusions:
(I) Some watches are pendulums:
Some watches → clocks
All clocks → pendulums
Therefore, those watches that are clocks must also be pendulums.
Conclusion (I) logically follows.
(II) All pendulum are clocks:
The statement says all clocks are pendulums,
But it does NOT say all pendulums are clocks (reverse is not guaranteed).
Conclusion (II) does NOT follow.
.So, Only conclusion (I) follows.
Hence, the correct answer is "Option 3".

Q96. Answer: (a) 2

Given Number: 5187463
If 1 is added to each odd digit and 2 is subtracted from each even digit in the number, we get
New number: 6268244
The digits are: 6 2 6 8 2 4 4
The second digit from the left is 2.
Hence, the correct answer is 'Option 3'.

Q97. Answer: (a) 2

Given: (Left) @ 8 $ & + 7 1 * 6 % Ω £ 2 4 5 9 # 3 (Right)
Now,
Numbers which is immediately preceded by a symbol and also immediately followed by another symbol.
So, Needed pattern is: Symbol - Number - Symbol.
There are 2 Numbers which is immediately preceded by a symbol and also immediately followed by another symbol.
Hence, the correct answer is 'Option 1'.

Q98. Answer: (d) F

Given: Seven boxes F, G, H, I, K, L, and O are kept one over the other but not necessarily in the same order.
1) No box is kept above G.

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2) Only three boxes are kept between G and F.
3) Only one box is kept between I and L.
4) L is kept immediately above F.
5) Only four boxes are kept between I and K.
6) H is kept at some place above O.

G
I
H
L
F
O
K

So, 'F' is kept second below H.
Hence, the correct answer is "Option 4".

Q99. Answer: (a) BQN : FNT

The position and positional values or English Alphabets are:
Now,
LCP : PZV
TWB : XTH
Let's check each Option One by One.
Option 1) BQN : FNT
Option 2) HWK : LBO
Option 3) HTO : LQS
Option 4) UKD : YFH
So, Only BQN : FNT follows the pattern of given letter cluster.
Hence, the correct answer is 'Option 1'.

Q100. Answer: (c) 5

Given Number: 6243514
If 3 is added to each odd digit and 1 is subtracted from each even digit in the number, we get
New number = 5136843
Second from the left:
New number = 5 1 3 6 8 4 3 → digit = 1
Second from the right:
New number = 5 1 3 6 8 4 3 → digit = 4
So, Sum = 1 + 4 = 5
Hence, the correct answer is 'Option 3'.

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