RRB NTPC (UG) CBT-I Official Paper (Held On: 08 Sept, 2025 Shift 1) (Previous Year Paper)

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

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GENERAL AWARENESS

Q1. What was India's rank in the 2025 Human Development Index (HDI) released by the United Nations Development Programme (UNDP)?

(a) 135
(b) 130
(c) 140
(d) 125

Q2. Which Indian minister highlighted India's economic growth and IT advancements at Davos 2025?

(a) Rajnath Singh
(b) Nirmala Sitharaman
(c) Piyush Goyal
(d) Ashwini Vaishnaw

Q3. Which of the following initiatives were launched by the Department of Posts in May 2025 to modernise India’s addressing system and enhance last-mile delivery?

(a) India Address Precision System and Postal Service Enhancer
(b) GeoLocate India and Postal Code Finder
(c) Know Your DIGIPIN and Know Your PIN Code web platforms
(d) Digital India Address Mapping and National Postal Tracker

Q4. What was the position of India in 2014 among the economies of the world?

(a) 10^(th) largest
(b) 7^(th) largest
(c) 12^(th) largest
(d) 15^(th) largest

Q5. Which of the following techniques was used by the Harappans to create bronze sculptures?

(a) Engraving
(b) Lost-wax casting
(c) Stone carving
(d) Hand-molding

Q6. Launched by the former Vice-President Jagdeep Dhankhar in May 2025, who is the author of the book ‘Chunautiyan Mujhe Pasand Hain’?

(a) Santosh Kumar Gangwar
(b) Anandiben Patel
(c) Thaawarchand Gehlot
(d) Pratap Shukla

Q7. The Mutual Credit Guarantee Scheme, approved by the Government of India in January 2025, provides what percentage of guarantee coverage for credit facility to member lending institutions?

(a) 80%
(b) 50%
(c) 60%
(d) 40%

Q8. Which of the following changes would need the approval of at least half of all State Legislatures?

(a) Amending the Emergency provisions in Part XVIII
(b) Rewriting the Preamble's text
(c) Changing the Guarantee of Fundamental Rights
(d) Altering the Union List of subjects

Q9. Equal pay for equal work is ensured under which Article?

(a) Article 39(d)
(b) Article 43
(c) Article 42
(d) Article 39(a)

Q10. In which year was the Rajiv Gandhi Khel Ratna Award officially renamed the Major Dhyan Chand Khel Ratna Award?

(a) 2019
(b) 2015
(c) 2021
(d) 2017

Q11. Who is described as the 'permanent executive'?

(a) Members of the elected Parliament
(b) The permanent civil servants who manage daily administration
(c) Judges of the Supreme Court
(d) The heads of government and their ministers

Q12. What is the primary objective of the Inter-Services Organisations (Command, Control & Discipline) Rules, which came into effect from May 2025?

(a) To centralise intelligence operations
(b) To establish a unified military command structure
(c) To privatise defence manufacturing
(d) To integrate paramilitary forces under the Ministry of Defence

Q13. Under which Article does the Supreme Court of India exercise original jurisdiction in cases involving the violation of Fundamental Rights?

(a) Article 32
(b) Article 136
(c) Article 226
(d) Article 131

Q14. Which Chilean filmmaker won the top award in the Un Certain Regard section at the 77th Cannes Film Festival for the debut feature 'The Mysterious Gaze of the Flamingo'?

(a) Andrés Wood
(b) Diego Céspedes
(c) Sebastián Lelio
(d) Pablo Larraín

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Q15. What is the name of India's indigenous long-range surface-to-air missile system under development, expected to be operational by 2028–29?

(a) Agni-V
(b) Trishul
(c) Project Kusha
(d) Akash-NG

Q16. What was the theme of the ‘World Sustainable Development Summit’ organised by ‘The Energy and Resources Institute' (TERI) at India Habitat Centre New Delhi in March 2025?

(a) Land Restoration, Desertification and Drought Resilience
(b) Invest In Our Planet
(c) Partnerships for Accelerating Sustainable Development and Climate Solutions
(d) Ecosystem Restoration

Q17. The Golden Quadrilateral connects which of the following four major metro cities?

(a) Mumbai, Kolkata, Bhopal, Bengaluru
(b) Delhi, Mumbai, Hyderabad, Kolkata
(c) Delhi, Chennai, Kolkata, Mumbai
(d) Delhi, Bengaluru, Hyderabad, Chennai

Q18. Which of the following is the largest source of electricity generation in India?

(a) Solar energy
(b) Nuclear energy
(c) Wind energy
(d) Thermal power

Q19. Which of the following sectors contributed the most to India’s defence exports in FY 2023-24?

(a) The private sector contributed about 60% and DPSUs about 40%
(b) Only the private sector
(c) Only DPSUs
(d) The private sector and DPSUs equally

Q20. In which State will north India's first nuclear project be set up?

(a) Haryana
(b) Uttarakhand
(c) Punjab
(d) Himachal Pradesh

Q21. Which of the following quantities has both magnitude and direction?

(a) Time
(b) Distance
(c) Speed
(d) Velocity

Q22. Which of the following is an example of chemical weathering?

(a) Frost action
(b) Exfoliation
(c) Abrasion
(d) Oxidation

Q23. Where is India’s first Quantum Computing Village proposed to be established, as per a meeting by that state's government in April 2025, under the Real-Time Governance Society (RTGS)?

(a) Bengaluru, Karnataka
(b) Thiruvananthapuram, Kerala
(c) Amaravati, Andhra Pradesh

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(d) Patna, Bihar

Q24. Which key urban feature of Indus Valley cities shows advanced planning with streets intersecting at right angles and covered drains?

(a) Grid-pattern layout
(b) Citadel only
(c) Slums
(d) Forts

Q25. The PM SVANidhi scheme is available for beneficiaries belonging to only those States/UTs which have notified rules and a scheme under the Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, _____.

(a) 2001
(b) 2008
(c) 2014
(d) 2005

Q26. Which of the following pairs is correctly matched with both its abbreviation and its function?

(a) ROM – Read Only Memory – Stores boot instructions needed when the computer is powered on
(b) PCB – Printed Chip Base – Transfers data from CPU to display
(c) CPU – Central Processing Unit – Stores user files permanently
(d) RAM – Read Access Memory – Runs the operating system even after power is off

Q27. Which state's physiography is largely defined by the Indo-Gangetic Plain?

(a) Rajasthan
(b) Uttar Pradesh
(c) Sikkim
(d) Jharkhand

Q28. Aruna Asaf Ali is widely remembered for hoisting the Indian National flag during the Quit India Movement in 1942 at the _____.

(a) Shivaji Park, Bombay
(b) Gandhi Maidan, Patna
(c) Pragati Maidan, Delhi
(d) Gowalia Tank Maidan, Bombay

Q29. Which of the following tribunals deals specifically with service-related matters of public servants?

(a) Income Tax Appellate Tribunal
(b) Armed Forces Tribunal
(c) National Green Tribunal
(d) Central Administrative Tribunal

Q30. The ampere magnitude is determined by setting the numerical value of the elementary charge equal to _____.

(a) 1.624432754 x 10^(–17) C
(b) 1.655908436 x 10^(–18) C
(c) 1.602176634 x 10^(-19) C
(d) 1.611547243 x 10^(–19) C

Q31. Which sector was most affected by liberalisation in India?

(a) Public Distribution
(b) Agriculture
(c) Industry and Services
(d) IT

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Q32. Which of the following actions will move a file to the Recycle Bin in Windows?

(a) Right-click the file → Select Rename
(b) Press Enter on the selected file
(c) Right-click the file → Select Delete
(d) Drag the file into Taskbar

Q33. According to the 2024 World Happiness Report, which country was ranked as the happiest?

(a) Iceland
(b) Sweden
(c) Denmark
(d) Finland

Q34. What does the closeness of magnetic field lines indicate about the magnetic field?

(a) Direction of the electric field
(b) Presence of electric charge
(c) Relative strength of the magnetic field
(d) Direction of the magnetic field

Q35. Which tribal leader led the Munda Ulgulan (rebellion) in the 1890s?

(a) Tana Bhagat
(b) Gunda Dhur
(c) Tilka Manjhi
(d) Birsa Munda

Q36. Arthashastra, which formed the basis of governance and administration during the Mauryan period, discussed which of the following problems of the citizens?

(a) Cross-border and educational issues
(b) Socio-economic problems
(c) Ethical and morality issues of the rulers
(d) Geo-political problems of the kingdom

Q37. Which private firm produced the first rear fuselage for Light Combat Aircraft Mk1A that was handed over to Hindustan Aeronautics Limited (HAL) in Bengaluru?

(a) Mahindra Defence
(b) Alpha Tocol Engineering Services
(c) Larsen & Toubro
(d) Tata Advanced Systems

Q38. Who was the sole representative of the Indian National Congress in the 2nd Round Table Conference of 1931?

(a) Dr B R Ambedkar
(b) Chittaranjan Das
(c) Mahatma Gandhi
(d) Jawaharlal Nehru

Q39. Between 1991 and 2020, India’s export-import trends show:

(a) Export-to-import ratio remaining at 1:1
(b) Trade surplus every year
(c) Rising imports outpacing exports and widening the trade deficit
(d) Continuous decline of imports

Q40. Clear skies, rising temperatures, and moist land — conditions commonly referred to as ‘October heat’ — are associated with which of the following in the Indian context?

(a) Cyclonic Depressions of Arabian Sea
(b) Monsoon Wind striking the Western Coast
(c) Cyclonic Depressions of Bay of Bengal

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(d) Retreating Monsoon

MATHEMATICS

Q41. The product of two consecutive natural numbers is 650. The greater of the two numbers is:

(a) 29
(b) 31
(c) 43
(d) 26

Q42. The average weight of Ram, Anwar and Amit is 45 kg. If the average weight of Ram and Anwar is 44 kg and that of Anwar and Amit is 42 kg, then the weight of Anwar (in kg) is:

(a) 37
(b) 52
(c) 57
(d) 47

Q43. Find the value of: 69^(−4) ÷ 69^(15) × 69^(−9)

(a) 69^(−23)
(b) 69^(−38)
(c) 69^(−37)
(d) 69^(−28)

Q44. The price of a laptop is Rs. 46,000, and a trade discount of 16% is available. What will be the final amount the customer pays?

(a) Rs. 38,640
(b) Rs. 38,685
(c) Rs. 38,625
(d) Rs. 38,610

Q45. In covering a distance of 102 km, Amit takes 8 hours more than Vinay. If Amit doubles his speed, then he would take 9 hours less than Vinay. Amit's speed is:

(a) 10 km/hr
(b) 3 km/hr
(c) 8 km/hr
(d) 11 km/hr

Q46. Simplfy:

(1 + sin A)(sec A - tan A)/(cosec A(1 - cos A)(csc A + cot A))

(a) tanA
(b) 1
(c) 2
(d) cosA

Q47. If 2 times a mother's present age is 26 years more than 6 times her daughter's present age, and 4 times the daughter's present age is 4 years less than the mother's present age, then what is the difference (in years) between the ages of the mother and the daughter?

(a) 29
(b) 32
(c) 31
(d) 36

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Q48. The simple interest on a certain sum for 27/8 years at the rate of 2.9% per annum is 8,671. What will be the amount payable on the same sum at the rate of 4.5% per annuun simple interest in 42/5 years?

(a) Rs. 1,24,608
(b) Rs. 1,24,574
(c) Rs. 1,24,590
(d) Rs. 1,24,592

Q49. Find the value of x satisfying: $3(3x^2 - 6) - 3(3x^2 + 5x - 7) = 19$

(a) -13/15
(b) -26/15
(c) -16/15
(d) -14/15

Q50. Gopal, Hema, and Uday invest Rs. 1,130, Rs. 1,030, and Rs. 1,840, respectively, to start a business. If the profit at the end of the year is Rs. 1,800, then what is the share of Uday in the profit?

(a) Rs. 830
(b) Rs. 825
(c) Rs. 831
(d) Rs. 828

Q51. A man makes a monthly payment equal to 36% of his monthly salary towards debt repayment. He spends 50% of the remaining salary and saves Rs. 704. His monthly salary (in Rs.) is:

(a) 2,104
(b) 2,116
(c) 2,200
(d) 2,202

Q52. A man driving a car at a speed of 21 km/hr crosses a bridge in 18 minutes. Find the length of the bridge.

(a) 4.7 km
(b) 15.2 km
(c) 6.3 km
(d) 2.5 km

Q53. Find the value of: $[138 \div \{13 + 7 \times (3 - 4)\}]$.

(a) 23
(b) 18
(c) 20
(d) 27

Q54. A can do a work in 11 days and B can do the same work in 23 days. If they work on it together for 2 days, then what fraction of the work is left?

(a) 193/253
(b) 192/253
(c) 185/253
(d) 181/253

Q55. The LCM of the numbers 2.9 and 0.031 is:

(a) 89.9
(b) 0.899
(c) 8.99
(d) 899

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Q56. What is the number of iron balls, each of radius 4 cm, that can be moulded out of a sphere of diameter 64 cm?

(a) 729
(b) 216
(c) 343
(d) 512

Q57. Rs. 45,800 were divided among A, B and C such that 2 times the share of A = 4 times the share of B = 7 times the share of C. Find the share of A.

(a) Rs. 25,582
(b) Rs. 25,828
(c) Rs. 25,648
(d) Rs. 25,611

Q58. What smallest number should be added to 19964 so that the sum is completely divisible by 76?

(a) 21
(b) 25
(c) 24
(d) 22

Q59. The sum of five numbers is 655. The average of the first two numbers is 80 and the third number is 106. Find the average of the remaining two numbers.

(a) 195.5
(b) 186
(c) 194.5
(d) 187

Q60. A shopkeeper gives two successive discounts of 20% and 10% on a shirt marked at Rs. 1,200. What is the final selling price?

(a) Rs. 880
(b) Rs. 890
(c) Rs. 870
(d) Rs. 864

Q61. Kiran can do a certain piece of work in 26 days. Kiran and Garima can together do the same work in 13 days, and Kiran, Garima and Mehak can do the same work together in 10 days. In how many days can Kiran and Mehak do the same work together?

(a) 74/5
(b) 64/4
(c) 65/4
(d) 60/6

Q62. If 43% of first number is equal to two-ninths of second number, what is the ratio of first number to the second number?

(a) 202 : 384
(b) 198 : 382
(c) 200 : 387
(d) 201 : 390

Q63. Which of the following statements is true regarding quadrilaterals?

(i) A rhombus can be a square, but not all squares are rhombuses.
(ii) In a trapezium, two pairs of opposite sides are equal.
(iii) A rhombus is a special type of a parallelogram.
(iv) Diagonals are equal in parallelograms and rhombuses.

(a) iv
(b) iii

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(c) ii
(d) i

Q64. Sapna invested Rs. 22,400 on simple interest, partly at 12% per annum and partly at 8% per annum. If she earns equal interests from the two investments after 4 years, then find the sum invested at 12% per annum (in Rs.).
(a) 8,960
(b) 8,962
(c) 8,958
(d) 8,963

Q65. A shopkeeper lists the price of a fan at 44% above its cost price and offers a 25% discount on its list price. If he earns a profit of Rs. 67, then what is the list price (in Rs.) of the fan?
(a) 1,206
(b) 1,441
(c) 1,194
(d) 1,457

Q66. If the radius of the base of a right circular cylinder is decreased by 28% and its height is increased by 141%, then what is the percentage increase (closest integer) in its volume?
(a) 29%
(b) 15%
(c) 17%
(d) 25%

Q67. By how much is 65% of 75 greater than 3/5 of 55?
(a) 13.75
(b) 12.75
(c) 9.75
(d) 15.75

Q68. The HCF and LCM of two numbers are 3 and 396, respectively. If one of the numbers is 132, find the other one.
(a) 60
(b) 80
(c) 90
(d) 9

Q69. Himanshi bought a toy for Rs. 743, decorated it at a cost of Rs. 8 and sold the toy for Rs. 750. Find the loss or profit percentage.
(a) 100/751% loss
(b) 100% loss
(c) 100/751% profit
(d) 110/751% profit

Q70. The number 242425 is divisible by which of the following?
(a) 6
(b) 9
(c) 13
(d) 5

GENERAL INTELLIGENCE AND REASONING

Q71. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements: Some notes are books. All books are keys.

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Conclusions (I): Some notes are keys.

Conclusions (II): All keys are books.

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

Q72. Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete?

VOH 90, SLE 83, PIB 76, MFY 69, JCV 62, ?

(a) GJS 55
(b) HZS 55
(c) GZS 55
(d) GZI 55

Q73. Each of the digits in the number 8912346 is arranged in ascending order from left to right. What will be the sum of the digits that are second from the left and second from the right in the new number thus formed?

(a) 7
(b) 6
(c) 10
(d) 8

Q74. If 2 is added to each even digit and 1 is subtracted from each odd digit in the number 4376295, then which of the following digits will be third from the right in the new number thus formed?

(a) 4
(b) 8
(c) 7
(d) 2

Q75. What should come in place of the question mark (?) in the given series?

60 71 93 137 225 ?

(a) 400
(b) 401
(c) 402
(d) 403

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

TVY QSV NPS KMP ?

(a) HIM
(b) HJM
(c) HJN
(d) HIN

Q77. A, B, C, D, J, K and L are sitting around a circular table, facing the centre of the table. Only one person sits between A and L when counted from the right of A. Only one person sits between L and J. Only one person sits between A and D. Only two people sit between K and J. Only one person sits between C and D. Who sits third to the right of B?

(a) A
(b) C
(c) D
(d) L

Q78. In a certain code language, ‘POUR’ is coded as ‘4527’ and ‘UNIT’ is coded as ‘1356’. What is the code for ‘U’ in that language?

(a) 2
(b) 5

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(c) 1
(d) 3

Q79. Seven boxes A, B, C, D, E, F and G are kept one over the other but not necessarily in the same order. Only three boxes are kept above E. Only one box is kept between G and E. Only three boxes are kept between G and C. C is kept at some place above E. B is kept immediately below C. D is kept at one of the places above F. A is not kept immediately above or below G. How many boxes are kept between C and D?

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

Q80. Paras, Mani, Kajal, Kunj, Vani and Saras are sitting around a circle, facing the centre. Saras sits third to the left of Vani. Vani sits second to the right of Paras. Kunj sits second to the left of Kajal. Who sits to the immediate right of Mani?

(a) Paras
(b) Kajal
(c) Vani
(d) Saras

Q81. Bismil starts from Point A and drives 14 km towards South. He then takes a left turn, drives 19 km, turns left and drives 16 km. He then takes a left turn and drives 26 km. He takes a final left turn, drives 2 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) 7 km to the east
(b) 6 km to the east
(c) 7 km to the west
(d) 6 km to the west

Q82. In a certain code language, ‘COLD’ is coded as ‘2357’ and ‘LEAN’ is coded as ‘4136’. What is the code for ‘L’ in that language?

(a) 5
(b) 6
(c) 3
(d) 4

Q83. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

All oranges are bananas.

All bananas are grapes.

Conclusions:

(I): All oranges are grapes.

(II): All grapes are bananas

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

Q84. If 1 is added to each even digit and 1 is subtracted from each odd digit in the number 697312458, what will be the sum of all the odd digits in the new number thus formed?

(a) 24
(b) 20
(c) 18

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(d) 26

Q85. In a row of 49 students facing North, Anish is 17^(th) from the right end. If Raghav is 12^(th) to the left of Anish, what is Raghav's position from the left-end of the line?

(a) 20^(th)
(b) 22^(nd)
(c) 21^(st)
(d) 23^(rd)

Q86. Select the number from among the given options that can replace the question mark (?) in the following series.

180 159 135 108 78 ?

(a) 54
(b) 35
(c) 45
(d) 32

Q87. Namit ranked 13^(th) from the bottom and 19^(th) from the top in his class. How many students are there in his class?

(a) 31
(b) 33
(c) 30
(d) 32

Q88. If 2 is added to each even digit and 1 is subtracted from each odd digit in the number 76391452, how many digits will appear more than once in the new number thus formed?

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

Q89. In the following number-pairs, the second number is obtained by applying certain mathematical operations to the first number. Select the 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 its constituent digits. E.g., 13 – Operations on 13 such as adding/subtracting/multiplying etc. to 13 can be performed. Breaking down 13 into 1 and 3 and then performing mathematical operations on 1 and 3 is not allowed.)

21, 124

18, 106

(a) 9, 56
(b) 6, 36
(c) 15, 86
(d) 13, 76

Q90. 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 one 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) AV – HK
(b) HC – QR
(c) JE – QT
(d) VQ – CF

Q91. A is the son of K. K is the father of P. P is the sister of D. D is the mother of M. M is the son of R. R is the son of B. How is A related to M?

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

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(d) Father's father

Q92. What should come in place of the question mark (?) in the given series?

44 39 29 14 −6 ?

(a) −31
(b) −35
(c) −34
(d) −32

Q93. This question is based on the five, three-digit numbers given below.

(Left) 452 561 514 232 294 (Right)

(Example- 697 – First digit = 6, second digit = 9 and third digit = 7)

(NOTE: All operations to be done from left to right.)

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

(a) 6
(b) 4
(c) 14
(d) 7

Q94. Anil starts from Point Y and drives 12 km towards the south. He then takes a right turn and drives 36 km, then turns left and drives 33 km. He then takes a left turn and drives 17 km. He takes a left turn and drives 21 km. He then turns right and drives 19 km, then turns right and drives 13 km to stop at Point Z. How far (shortest distance) and in which direction should he drive in order to reach Point Y again? (All turns are 90-degree turns only unless specified.)

(a) 42 km towards the north
(b) 39 km towards the south
(c) 41 km towards the south
(d) 37 km towards the north

Q95. 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) BG-UZ
(b) KP-DI
(c) PU-IM
(d) XC-QV

Q96. VELG is related to ZZPB in a certain way based on the English alphabetical order. In the same way, DUTW is related to HPXR. To which of the given options is LKBM related, following the same logic?

(a) REEG
(b) PFFH
(c) QDEH
(d) OEFG

Q97. 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.

MINT - ITNM - TNIM

PLUS - LSUP - SULP

(a) WANT - AWNT - TANW
(b) COIL - OLIC - LIOC
(c) REST - RSET - TSER
(d) TOWN - OTWN - NOWT

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Q98. Select the pair which follows the same pattern as that followed by the two pairs given below. Both pairs follow the same pattern.

LXK : PVH

BPY : FNV

(a) LBO : PGS
(b) LHC : PEG
(c) PNW : TKA
(d) TTE : XRB

Q99. Refer to the following number and symbol series and answer the question that follows. All numbers are single-digit. Counting to be done from left to right only.

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

If all the symbols are dropped from the series, which of the following will be sixth from the right end?

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

Q100. 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) ZC - WX
(b) KL - HG
(c) TJ - QE
(d) OD - KY

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (b) 130

The correct answer is 130.

Key Points

• India ranked 130th in the 2025 Human Development Index (HDI) released by the United Nations Development Programme (UNDP).

• The HDI measures a country's overall achievement in three key dimensions of human development: health (life expectancy), education (mean years of schooling and expected years of schooling), and standard of living (Gross National Income per capita).

• India's ranking reflects its progress in areas such as health and education, but it also highlights the need for improvements in income equality and access to quality services.

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• The HDI report for 2025 focused on the post-pandemic recovery and its impact on global and national development indicators, emphasizing the need for sustainable and inclusive growth.

• Countries with a higher HDI ranking demonstrate better human development outcomes, with India categorized under the "medium human development" group.

Additional Information

• Human Development Index (HDI):

• The HDI is a composite index introduced by the UNDP in 1990 to measure and compare levels of development across countries.

• It considers three dimensions: health (life expectancy at birth), education (mean years of schooling and expected years of schooling), and standard of living (measured by Gross National Income per capita adjusted for purchasing power parity).

• The HDI provides a comprehensive picture of a country's development, beyond just economic growth.

Q2. Answer: (d) Ashwini Vaishnaw

The correct answer is Ashwini Vaishnaw.

Key Points

• Ashwini Vaishnaw is the current Union Minister for Railways, Communications, and Electronics & Information Technology in India.

• He represented India at the World Economic Forum (WEF) 2025 in Davos and highlighted India's rapid economic growth and advancements in the IT sector.

• During his speech, he emphasized India's successful digital transformation initiatives, such as Digital India, UPI (Unified Payments Interface), and Aadhaar-based services.

• Vaishnaw also showcased India's leadership in semiconductor manufacturing and 5G technology development, underlining the country's potential to become a global IT hub.

• His participation at Davos reflected the Indian government's commitment to strengthening global collaborations in technology, infrastructure, and innovation.

Additional Information

• Rajnath Singh

• He is the current Union Minister of Defence in India.

• Rajnath Singh is responsible for India's defence strategy and modernization of the armed forces.

• He has been instrumental in launching initiatives such as Atmanirbhar Bharat in Defence Manufacturing, promoting indigenous production of defence equipment.

• Though an important leader, his portfolio does not involve highlighting India's IT advancements or economic growth on a global platform.

• Nirmala Sitharaman

• She is the current Union Minister of Finance and Corporate Affairs in India.

• Nirmala Sitharaman has been pivotal in implementing key economic reforms, including the Union Budget, GST reforms, and measures to boost India's economic recovery post-COVID-19.

• While she often represents India in international economic forums, her focus is primarily on fiscal policy and economic governance rather than IT advancements.

• Piyush Goyal

• He is the current Minister of Commerce & Industry, Consumer Affairs, Food & Public Distribution, and Textiles in India.

• Piyush Goyal has been actively involved in trade negotiations, boosting India's exports, and promoting the 'Make in India' initiative.

Q3. Answer: (c) Know Your DIGIPIN and Know Your PIN Code web platforms

The correct answer is Know Your DIGIPIN and Know Your PIN Code web platforms.

Key Points

• The Department of Posts launched the Know Your DIGIPIN and Know Your PIN Code web platforms in May 2025 to modernize India's addressing system.

• These platforms aim to enhance last-mile delivery by introducing a digital and precise addressing mechanism for postal services.

• Know Your DIGIPIN is designed to complement India's existing PIN code system by assigning unique digital identifiers to addresses, ensuring better accuracy in location mapping.

• Know Your PIN Code integrates advanced geospatial technology, allowing users to locate their postal codes and understand address-specific delivery zones.

• The initiative aligns with the broader goals of the Digital India program by leveraging technology for efficient postal and delivery services.

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Additional Information

• PIN code (Postal Index Number)

• A PIN code (Postal Index Number) is the traditional 6-digit numeric code introduced in 1972 to sort mail into broad geographical zones.

• It helps route mail to the correct post office but lacks specific, doorstep-level accuracy, as one PIN code can cover an entire neighborhood or multiple villages.

• DIGIPIN (Digital Postal Index Number)

• A DIGIPIN (Digital Postal Index Number), launched in May 2025, is a modern 10-character alphanumeric code that provides precise, GPS-level location accuracy, down to an approximate 4x4 meter area.

• Developed by India Post in collaboration with IIT Hyderabad and ISRO, it is a geospatial identifier that complements the existing PIN code system.

• The DIGIPIN is an open-source system designed to improve last-mile delivery, enhance emergency responses, and support digital services across India.

• Users can find their DIGIPIN through the official India Post portal by using their precise geolocation.

Q4. Answer: (a) 10^(th) largest

The correct answer is 10th largest.

Key Points

• In 2014, India was the 10th largest economy in the world by nominal GDP, according to data from the International Monetary Fund (IMF).

• The nominal GDP of India in 2014 was approximately 2.04 trillion USD, which placed it in the 10th position globally.

• The United States was the largest economy in the world in 2014, followed by China, Japan, and Germany.

• India’s position as the 10th largest economy reflected its steady economic growth and its emergence as a major player in the global economy.

• The growth trajectory during this period was driven by sectors such as IT services, manufacturing, and trade, along with policy reforms aimed at liberalizing the economy.

Additional Information

• Economic growth in India:

• India’s economic growth has historically been driven by factors such as demographic advantage, a growing middle class, and advancements in technology and innovation.

• Government policies, such as the introduction of GST and Make in India, have further contributed to India’s economic progression.

• Currently the world’s fourth-largest economy, India is on track to become the third-largest by 2030 with a projected $7.3 trillion GDP.

• This momentum is powered by decisive governance, visionary reforms, and active global engagement.

• Notably, growth is accelerating, with real GDP expected to rise by 7.8% in Q1 FY 2025-26, up from 6.5% a year earlier.

Q5. Answer: (b) Lost-wax casting

The correct answer is Lost-wax casting.

Key Points

• The lost-wax casting technique, also known as cire perdue, was widely used by the Harappans for creating intricate bronze sculptures.

• In this process, artisans first created a model of the sculpture using wax, which was then encased in clay or another refractory material.

• The wax was melted out, leaving a hollow mold that was filled with molten metal, such as bronze, to form the final sculpture.

• This method allowed the Harappans to produce highly detailed and sophisticated sculptures, as seen in artifacts like the famous "Dancing Girl" of Mohenjo-Daro.

• The lost-wax casting technique highlights the advanced metallurgical skills and artistic craftsmanship of the Harappan civilization.

Additional Information

• Engraving:

• Engraving is the art of carving designs onto a surface, typically metal, wood, or stone.

• This method is more suitable for creating decorative patterns or inscriptions rather than free-standing sculptures.

• Stone carving:

• Stone carving involves shaping stone into desired forms using tools like chisels and hammers.

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• Although the Harappans were skilled in stone carving, evidenced by seals and architectural remains, this technique was distinct from their methods of creating bronze sculptures.

• Stone carving is more commonly associated with sculptures and monuments in other cultures, such as Egyptian and Greek civilizations.

• Hand-molding:

• Hand-molding refers to directly shaping materials like clay or wax with hands or simple tools.

• It is a versatile technique but lacks the precision and complexity achieved through lost-wax casting.

• While hand-molding might have been used for preliminary designs.

Q6. Answer: (b) Anandiben Patel

The correct answer is Anandiben Patel.

Key Points

• 'Chunautiyan Mujhe Pasand Hain' is a book authored by Anandiben Patel, who is an Indian politician and the current governor of Uttar Pradesh (as of 2023).

• The book was launched by the former Vice-President of India, Jagdeep Dhankhar, in May 2025.

• Anandiben Patel has served as the first female Chief Minister of Gujarat from 2014 to 2016.

• The book reflects her life experiences, challenges, and her journey as a political leader and administrator.

• Anandiben Patel is known for her contributions to education, women's empowerment, and rural development during her tenure in public service.

Additional Information

• Santosh Kumar Gangwar

• He is a senior Indian politician and a member of the Bharatiya Janata Party (BJP).

• Gangwar has served as the Minister of State for Labour and Employment in the Government of India.

• He has been actively involved in legislative matters and has represented Bareilly constituency in the Lok Sabha multiple times.

• Thaawarchand Gehlot

• He is an Indian politician and the current Governor of Karnataka (as of 2023).

• Gehlot has previously served as the Minister of Social Justice and Empowerment in the Union Government.

• He has been a strong advocate for the rights of marginalized communities and has worked extensively for their upliftment.

• Pratap Shukla

• He is an Indian politician and member of the Bharatiya Janata Party (BJP).

• Shukla has served as the Governor of Himachal Pradesh.

• He has a significant political career and has contributed to the development of his home state, Uttar Pradesh.

Q7. Answer: (c) 60%

The correct answer is 60%.

Key Points

• The Mutual Credit Guarantee Scheme was approved by the Government of India in January 2025 to provide financial support to lending institutions.

• The scheme offers a guarantee coverage of 60% on the credit facility extended by member lending institutions to eligible borrowers.

• This initiative aims to encourage lending to sectors requiring financial assistance while minimizing the risks faced by lending institutions.

• The 60% guarantee coverage reduces the financial burden on lenders, ensuring the sustainability of credit flow to targeted sectors.

• The scheme is particularly significant for small and medium enterprises (SMEs) and startups seeking affordable credit to sustain or expand their operations.

Additional Information

• Credit Guarantee Schemes

• Credit guarantee schemes are vital for addressing the credit gap in economies, particularly for SMEs, startups, and unorganized sectors.

• They help enhance trust between lenders and borrowers by sharing the risk, thereby enabling financial inclusion and economic growth.

• Such schemes have been successfully implemented globally, with India being a key proponent of credit guarantees for vulnerable sectors.

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Q8. Answer: (a) Amending the Emergency provisions in Part XVIII

The correct answer is Amending the Emergency provisions in Part XVIII.

Key Points

• Amending the Emergency provisions in Part XVIII of the Indian Constitution requires the approval of at least half of all State Legislatures in addition to parliamentary approval.

• This amendment falls under the special category of constitutional amendments as prescribed in Article 368(2) of the Indian Constitution.

• Provisions such as altering the distribution of powers between the Union and States, including emergency provisions, necessitate consultation and approval from State Legislatures to maintain the federal structure of governance.

• Emergency provisions (Articles 352, 356, and 360) have a profound impact on the autonomy of states, making state approval essential for such amendments.

• Such requirements highlight the cooperative federalism embedded in India's constitutional framework.

Additional Information

• The key types of majorities:

• Simple Majority (Functional Majority)

• Definition: More than 50% of members present and voting.

• Use: Most common; for ordinary bills, confidence/no-confidence motions, declaring emergencies.

• Absolute Majority

• Definition: More than 50% of the total strength (total members) of the House.

• Use: Government formation, certain procedural matters.

• Effective Majority

• Definition: More than 50% of the effective strength (total strength minus vacancies).

• Use: Removing the Speaker/Deputy Speaker, or Vice-President.

• Special Majority

• Definition: Stronger majorities, varying by Article, often requiring 2/3rds present and voting plus >50% total membership.

• Use:

• Article 368 (Constitutional Amendments): Most significant changes need 2/3rds present & voting + >50% total strength.

• Article 368 + State Ratification: For federal provisions, needs Special Majority plus approval from half the state legislatures.

• Article 249/368: Other specific constitutional changes.

Q9. Answer: (a) Article 39(d)

The correct answer is Article 39(d).

Key Points

• Article 39(d) of the Indian Constitution directs the State to secure equal pay for equal work for both men and women as a part of the Directive Principles of State Policy (DPSP).

• It emphasizes eliminating gender discrimination in wages and ensuring equitable treatment in employment opportunities.

• This article plays a pivotal role in promoting social justice and economic equality in India.

• While DPSPs are not enforceable in a court of law, they provide a framework for governance and guide the State in making laws and policies.

• The principle of “equal pay for equal work” has been upheld multiple times by the Supreme Court of India as a fundamental right under the Constitution.

Additional Information

• Article 43:

• Article 43 directs the State to secure a living wage, decent standard of life, and social and cultural opportunities for all workers.

• It emphasizes improving the conditions of workers, especially in the unorganized sector, to achieve economic democracy.

• It also promotes cottage industries in rural areas to ensure sustainable livelihoods for workers.

• Article 42:

• Article 42 directs the State to make provisions for securing just and humane conditions of work and maternity relief.

• This article ensures dignity and well-being of workers by addressing issues like safe workplaces and maternity benefits for working women.

• Laws such as the Maternity Benefit Act and the Factories Act are inspired by this provision.

• Article 39(a):

• Article 39(a) directs the State to ensure that the operation of the legal system promotes justice on a basis of equal opportunity.

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• It mandates the provision of free legal aid to economically weaker sections to ensure access to justice.

• It forms the foundation of initiatives like the Legal Services Authorities Act, 1987.

Q10. Answer: (c) 2021

The correct answer is 2021.

Key Points

• The Rajiv Gandhi Khel Ratna Award was officially renamed the Major Dhyan Chand Khel Ratna Award in the year 2021.

• This decision was announced by Prime Minister Narendra Modi on 6th August 2021, to honor the legacy of hockey legend Major Dhyan Chand.

• The renaming was a tribute to Major Dhyan Chand, widely regarded as one of the greatest hockey players in history and a key contributor to India's success in the sport.

• The Khel Ratna Award is the highest sporting honor in India, awarded annually by the Ministry of Youth Affairs and Sports.

• The renaming aimed to shift the focus towards honoring sports excellence and the achievements of Indian athletes.

Additional Information

• Major Dhyan Chand:

• Major Dhyan Chand, known as the "Wizard of Hockey," is celebrated for his exceptional skills and contribution to Indian hockey.

• He helped India secure gold medals in the 1928, 1932, and 1936 Olympics, establishing the nation's dominance in the sport.

• The renaming of the award in his honor underscores his unparalleled legacy and the importance of sports in national pride.

Q11. Answer: (b) The permanent civil servants who manage daily administration

The correct answer is The permanent civil servants who manage daily administration.

Key Points

• The 'permanent executive' refers to the permanent civil servants who work in various government departments and agencies, ensuring the smooth functioning of day-to-day administration.

• Civil servants are professionally trained individuals recruited through competitive examinations, such as the Civil Services Examination conducted by the Union Public Service Commission (UPSC) in India.

• They are responsible for implementing government policies, advising ministers, and managing public services across sectors like health, education, defense, and infrastructure.

• Their role is apolitical, meaning they are expected to perform their duties without political bias, ensuring continuity and stability in governance regardless of changes in the ruling party.

• Their expertise and institutional memory make them essential for the functioning of the government over time, as they remain in office while elected representatives may change periodically.

Additional Information

• Members of the elected Parliament

• The elected Parliament consists of representatives chosen by the people through democratic elections, such as Members of Parliament (MPs) in the Lok Sabha and the Rajya Sabha in India.

• They form the legislative branch of the government and are responsible for enacting laws, debating policies, and holding the executive accountable.

• Unlike the permanent executive, their tenure is limited to the term of the Parliament (usually five years), after which elections are held again.

• Judges of the Supreme Court

• Judges of the Supreme Court are part of the judiciary, which is the third branch of government responsible for interpreting laws, protecting constitutional rights, and resolving disputes.

• They are independent of the executive and legislative branches and serve until the age of retirement (65 years in India).

• Their primary role is to uphold the rule of law and ensure justice is delivered impartially.

• The heads of government and their ministers

• The heads of government (e.g., Prime Minister, Chief Ministers) and their ministers form the political executive, which is responsible for formulating policies and decisions for governance.

• They are elected representatives who hold office for the duration of their government’s term and are accountable to the legislature and the public.

• Unlike the permanent executive, their tenure is tied to political outcomes, such as elections or parliamentary confidence.

Q12. Answer: (b) To establish a unified military command structure

The correct answer is To establish a unified military command structure.

Key Points

• The Inter-Services Organisations (Command, Control & Discipline) Rules aim to establish an integrated and unified military command structure within India's armed forces.

• This reform promotes better coordination, efficiency, and synergy among the Indian Army, Navy, and Air Force.

• The unified command structure is designed to streamline decision-making and enable quicker responses to security challenges.

• The rules enable the Chief of Defence Staff (CDS) and other integrated commands to exercise administrative and disciplinary control over personnel from all three services.

• This initiative is part of broader defence reforms aimed at modernising India's military and enhancing its operational capabilities.

Additional Information

• Indian Army (Land)

• Role: Protects land borders, deals with internal security, combats terrorism, and provides disaster relief.

• Focus: Ground operations, infantry, tanks, artillery, and securing vast land territories.

• Indian Navy (Sea)

• Role: Safeguards maritime borders, controls sea lanes, protects trade, and projects power across oceans.

• Focus: Warships, submarines, aircraft carriers, and naval aviation for maritime security.

• Indian Air Force (Air)

• Role: Secures airspace, provides air support, conducts surveillance, and executes aerial warfare.

• Focus: Fighter jets, transport aircraft, helicopters, drones, and missile systems.

Q13. Answer: (a) Article 32

The correct answer is Article 32.

Key Points

• Article 32 of the Indian Constitution empowers the Supreme Court to enforce Fundamental Rights through appropriate writs.

• It is referred to as the "Right to Constitutional Remedies" and is considered the soul of the Constitution, as described by Dr. B.R. Ambedkar.

• The Supreme Court can issue five types of writs under Article 32: Habeas Corpus, Mandamus, Prohibition, Certiorari, and Quo Warranto.

• This article provides individuals the right to directly approach the Supreme Court if their Fundamental Rights are violated.

• Article 32 is a part of the basic structure of the Constitution and cannot be amended or suspended, except during a National Emergency (Article 359).

Additional Information

• Article 136

• Article 136 grants the Supreme Court special leave jurisdiction to hear appeals against any judgment, decree, or order passed by any court or tribunal in India, except for cases involving the Armed Forces.

• This article gives the Supreme Court discretionary powers to intervene in cases where gross injustice or violation of law is evident.

• It is not concerned specifically with Fundamental Rights but serves as a corrective mechanism for justice delivery.

• Article 226

• Article 226 empowers the High Courts to issue writs for the enforcement of Fundamental Rights as well as for other purposes.

• This article provides a broader scope than Article 32, as High Courts can intervene in cases beyond Fundamental Rights, including legal rights.

• The jurisdiction of High Courts under Article 226 is concurrent with the Supreme Court under Article 32 in matters of Fundamental Rights.

• Article 131

• Article 131 grants the Supreme Court original jurisdiction in disputes between the Centre and one or more states, or between states themselves.

• It is primarily concerned with federal disputes and does not deal with the enforcement of Fundamental Rights.

• Cases under Article 131 typically involve constitutional questions related to the division of powers between the Centre and states.

Important Points

• Fundamental Rights

• Fundamental Rights are enshrined in Part III of the Indian Constitution, covering Articles 12 to 35.

• They ensure civil liberties for individuals to lead their lives with dignity and freedom.

• These rights are enforceable by courts, and mechanisms like Articles 32 and 226 provide citizens with a means to seek redressal in case of violations.

Q14. Answer: (b) Diego Céspedes

The correct answer is Diego Céspedes.

Key Points

• Diego Céspedes is a Chilean filmmaker who won the top award in the Un Certain Regard section at the 77th Cannes Film Festival for his debut feature, 'The Mysterious Gaze of the Flamingo'.

• The Un Certain Regard section is a prestigious competitive category at Cannes, dedicated to recognizing innovative and unique cinematic voices.

• 'The Mysterious Gaze of the Flamingo' explores themes of identity, social stigma, and acceptance, reflecting Céspedes' bold storytelling style and creative vision.

• Diego Céspedes gained recognition for his short film 'The Summer of the Electric Lion,' which won the Cinéfondation First Prize at Cannes in 2018, marking his rise as a prominent filmmaker in Chilean cinema.

• His work highlights socially relevant topics and blends magical realism with raw, emotional narratives, earning critical acclaim internationally.

Additional Information

• Andrés Wood

• Andrés Wood is a Chilean filmmaker known for directing critically acclaimed films such as 'Machuca' and 'Violeta Went to Heaven.'

• 'Machuca' explores issues of social inequality in Chile during the 1973 coup, while 'Violeta Went to Heaven' is a biographical film about the life of Chilean musician Violeta Parra.

• Wood is recognized for his focus on cultural and historical narratives that reflect Chile's societal complexities.

• Sebastián Lelio

• Sebastián Lelio is an acclaimed Chilean filmmaker best known for his Academy Award-winning film 'A Fantastic Woman', which won the Oscar for Best Foreign Language Film in 2018.

• He is celebrated for his exploration of themes such as gender identity, love, and societal norms.

• Other notable works include 'Gloria' and its English-language remake, 'Gloria Bell.'

• Pablo Larraín

• Pablo Larraín is a prominent Chilean filmmaker known for directing films like 'No,' 'Jackie,' and 'Spencer.'

• His work often explores political themes, historical events, and the lives of influential figures.

• 'No,' starring Gael García Bernal, focuses on the 1988 plebiscite that led to the end of Augusto Pinochet's dictatorship in Chile.

Q15. Answer: (c) Project Kusha

The correct answer is Project Kusha.

Key Points

• Project Kusha is India's indigenous long-range surface-to-air missile system currently under development by the Defence Research and Development Organisation (DRDO).

• The missile system is expected to be operational by 2028–29 and aims to strengthen India's air defense capabilities against threats such as enemy aircraft and missiles.

• It is designed to provide multi-layered defense by integrating advanced radar systems, interceptors, and command and control technologies.

• The primary objective of Project Kusha is to protect critical infrastructure, including military installations, urban centers, and strategic areas.

• This project highlights India’s commitment to achieving self-reliance in defense technologies under the "Make in India" initiative.

Additional Information

• Agni-V

• Agni-V is an advanced intercontinental ballistic missile (ICBM) developed by DRDO.

• It is capable of delivering nuclear warheads and has a range of approximately 5,500–8,000 km, making it India’s longest-range missile.

• The missile is part of the Agni series and is designed for deterrence against long-range threats.

• Trishul

• Trishul was a short-range surface-to-air missile developed by DRDO under the Integrated Guided Missile Development Program (IGMDP).

• It had a range of approximately 9 km and was intended for use in naval and air defense applications.

• The project was eventually discontinued due to technological challenges and limited operational success.

• Akash-NG (Next Generation)

• Akash-NG is an upgraded version of the Akash missile system, designed to enhance India's medium-range surface-to-air missile capabilities.

• It is developed by DRDO and is capable of intercepting aerial threats at ranges up to 70 km.

• Akash-NG incorporates advanced radar systems and improved kill probability compared to its predecessor.

• Surface-to-Air Missile Systems

• Surface-to-air missile systems are designed to detect, track, and neutralize airborne threats such as enemy aircraft, drones, and missiles.

• India has been actively developing indigenous technologies to strengthen its air defense capabilities, reducing dependency on foreign imports.

• These systems play a critical role in safeguarding national security and maintaining strategic deterrence.

Q16. Answer: (c) Partnerships for Accelerating Sustainable Development and Climate Solutions

The correct answer is Partnerships for Accelerating Sustainable Development and Climate Solutions.

Key Points

• The 'World Sustainable Development Summit' (WSDS) is an annual flagship event organized by The Energy and Resources Institute (TERI) to address climate change and sustainable development challenges worldwide.

• The theme for the March 2025 summit was "Partnerships for Accelerating Sustainable Development and Climate Solutions."

• This theme emphasized the importance of collaborative efforts across governments, private sectors, and civil societies to achieve global sustainable development goals (SDGs).

• The summit aimed to foster dialogue among policymakers, researchers, and businesses to accelerate climate action and promote sustainable economic growth.

• Key topics discussed during the summit included renewable energy, climate resilience, biodiversity conservation, and sustainable business practices.

Additional Information

• Land Restoration, Desertification, and Drought Resilience

• This theme is related to combating land degradation and desertification, as well as enhancing resilience against droughts.

• The United Nations Convention to Combat Desertification (UNCCD) often focuses on these issues, aligning with SDG Goal 15 (Life on Land).

• Invest In Our Planet

• This theme is prominently associated with Earth Day celebrations, encouraging individuals, governments, and organizations to invest in actions that protect the planet.

• It promotes sustainable investments in clean energy, waste management, and circular economies.

• Ecosystem Restoration

• Ecosystem restoration is a global initiative aimed at reversing damage to ecosystems and restoring biodiversity.

• It is aligned with the UN Decade on Ecosystem Restoration (2021–2030) and is critical for achieving multiple SDGs.

Important Points

• WSDS

• WSDS has been held annually since 2001, serving as a global platform to deliberate on actionable solutions for sustainable development.

• The summit brings together global leaders, scientists, activists, and policymakers to address pressing environmental challenges.

• It highlights India's leadership in promoting sustainable development and climate action on the global stage.

Q17. Answer: (c) Delhi, Chennai, Kolkata, Mumbai

The correct answer is Delhi, Chennai, Kolkata, Mumbai.

Key Points

• The Golden Quadrilateral (GQ) is a highway network that connects the four major metropolitan cities of India: Delhi, Chennai, Kolkata, and Mumbai.

• It is one of the largest highway projects in the world and was initiated by the National Highways Development Project (NHDP).

• The GQ spans a total length of approximately 5,846 kilometers, making it the second-largest highway project in India after the Bharatmala project.

• The project was launched in the year 2001 under the leadership of former Prime Minister Atal Bihari Vajpayee.

• The Golden Quadrilateral ensures seamless connectivity between the industrial, agricultural, and cultural hubs of India, promoting economic growth and development.

Additional Information

• Key Long & Major Highways:

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• NH 44 (Old NH 7): Longest, Srinagar to Kanyakumari (North-South Corridor).
• NH 27 (Old NH 8): East-West Corridor, Porbandar to Silchar, Gujarat to Assam.
• NH 48 (Old NH 8): Delhi to Chennai, part of the Golden Quadrilateral.
• NH 19 (Old NH 2): Delhi to Kolkata, another major Golden Quadrilateral stretch.
• NH 16 (Old NH 5): Kolkata to Chennai, East Coast Corridor.
• NH 66 (Old NH 17): Panvel (Mumbai) to Kanyakumari, connecting the west coast.
• NH 52: Connects Sangrur (Punjab) to Ankola (Karnataka), economically vital.
• NH 30: Sitarganj (Uttarakhand) to Ibrahimpatnam (Andhra Pradesh), known for safety.

Q18. Answer: (d) Thermal power

The correct answer is Thermal power.

Key Points

• Thermal power is the largest source of electricity generation in India, contributing significantly to the country's overall energy production.
• As of recent statistics, thermal power accounts for approximately 60-70% of India's total electricity generation.
• Thermal power plants in India primarily use coal, gas, and oil as fuel sources, with coal being the most dominant.
• India is the second-largest consumer of coal globally, and coal-fired thermal power plants are widespread across the nation.
• Major thermal power plants include the Vindhyachal Thermal Power Station (Madhya Pradesh) and Mundra Thermal Power Station (Gujarat).

Additional Information

• Solar energy
• Solar energy contributes to a smaller share of India's electricity generation compared to thermal power but is growing rapidly.
• India has ambitious renewable energy targets and aims to achieve 280 GW of solar power capacity by 2030 under its National Solar Mission.
• Prominent solar plants include the Bhadla Solar Park (Rajasthan) and Pavagada Solar Park (Karnataka).
• Nuclear energy
• Nuclear energy contributes about 2-3% of India's total electricity generation.
• India has operational nuclear reactors in states like Maharashtra, Tamil Nadu, and Rajasthan, with the Kudankulam Nuclear Power Plant being one of the largest.
• Nuclear power is considered a clean energy source and is part of India's long-term energy diversification strategy.
• Wind energy
• Wind energy is a significant renewable energy source in India, especially in states like Tamil Nadu, Gujarat, and Maharashtra.
• It contributes around 10% of India's total electricity generation and is the largest renewable energy source in the country.
• India has a target of achieving 140 GW of wind power capacity by 2030.

Q19. Answer: (a) The private sector contributed about 60% and DPSUs about 40%

The correct answer is The private sector contributed about 60% and DPSUs about 40%.

Key Points

• The private sector played a significant role in India's defence exports during FY 2023-24, contributing about 60% of the total exports.
• Defence Public Sector Undertakings (DPSUs) contributed around 40%, showcasing their importance in the defence manufacturing ecosystem.
• The increase in private sector contribution is attributed to the government's initiatives to promote private participation in defence production, including the Defence Production and Export Promotion Policy (DPEPP) 2020.
• The government has incentivized private companies through policies like the simplification of the Defence Acquisition Procedure (DAP) and the establishment of defence industrial corridors.
• India's defence exports in FY 2023-24 surpassed Rs. 15,000 crore, indicating a significant leap in global competitiveness and self-reliance in defence manufacturing.

Additional Information

• Technological Advancements:
• Missile Systems: Advanced indigenous missiles like Akash (SAM), BrahMos (supersonic cruise), and development of hypersonic weapons.
• Air Defense: Multi-layered systems (Sudarshan Chakra/S-400, Akash, Barak-8, BMD program) to counter various aerial threats, including drones.

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• Naval Power: Indigenous carriers, advanced destroyers, and nuclear submarines enhance "blue-water" capabilities.

• Emerging Tech: Investing in Directed Energy Weapons (lasers, microwaves) and cyber/electronic warfare.

Q20. Answer: (a) Haryana

The correct answer is Haryana.

Key Points

• North India's first nuclear power project is set to be established in the state of Haryana, specifically in Gorakhpur village, Fatehabad district.

• The project, known as the Gorakhpur Haryana Anu Vidyut Pariyojana (GHAVP), is being developed by the Nuclear Power Corporation of India Limited (NPCIL), a public sector enterprise under the Department of Atomic Energy.

• GHAVP will consist of two reactors, each with a capacity of 700 MW (megawatts), based on indigenous Pressurized Heavy Water Reactor (PHWR) technology.

• The project aims to enhance India's nuclear energy capacity and contribute significantly to meeting the country's growing energy demands.

• Once operational, GHAVP will provide clean and reliable energy, reducing dependency on fossil fuels and contributing to India's climate change mitigation goals.

Additional Information

• Uttarakhand

• Uttarakhand is known for its hydroelectric power projects due to its abundant water resources and hilly terrain.

• Prominent hydroelectric projects include the Tehri Dam, one of India's largest hydroelectric projects, generating over 1,000 MW of electricity.

• Punjab

• Punjab primarily relies on thermal power plants and renewable energy sources like solar power for its electricity needs.

• Himachal Pradesh

• Himachal Pradesh is a hub for hydroelectric power generation, with projects like the Nathpa Jhakri Hydroelectric Station contributing significantly to India's energy sector.

• Due to its geographic and seismic conditions, the state has not been chosen for nuclear power project development.

Important Points

• Nuclear Energy in India

• India is one of the few countries actively expanding its nuclear energy capacity to meet growing power demands while reducing carbon emissions.

• Currently, India has several operational nuclear power plants, including Kudankulam in Tamil Nadu, Tarapur in Maharashtra, and Kakrapar in Gujarat.

• Nuclear energy contributes approximately 3% to India's total electricity generation and is expected to grow with projects like GHAVP in Haryana.

• The government has emphasized the development of indigenous nuclear reactor technology, such as PHWRs, to ensure self-reliance in nuclear energy.

Q21. Answer: (d) Velocity

The correct answer is Velocity.

Key Points

• Velocity is a vector quantity, meaning it has both magnitude (speed) and direction.

• The formula for velocity is v = s/t, where "v" is velocity, "s" is displacement, and "t" is time.

• Unlike speed, which is scalar, velocity provides information about the direction of motion along with the rate of displacement.

• For instance, if an object moves 10 meters east in 2 seconds, its velocity would be 5 m/s east.

• Velocity can be positive, negative, or zero, depending on the direction of motion relative to a chosen reference point.

Additional Information

• Time

• Time is a scalar quantity, meaning it has magnitude but no direction.

• It is a fundamental physical quantity that measures the progression of events from the past to the present and into the future.

• The SI unit of time is the second (s).

• In physics, time plays a crucial role in equations of motion, such as speed = distance/time.

• Distance

• Distance is a scalar quantity that measures the total path covered by an object irrespective of direction.

• It is always positive and does not decrease, even if the object changes direction.
• The SI unit of distance is the meter (m).
• For example, if a person walks 5 meters forward and then 3 meters backward, the total distance covered is 8 meters.
• Speed
• Speed is a scalar quantity that represents how fast an object is moving.
• The formula for speed is speed = distance/time.
• Unlike velocity, speed does not include direction; it only indicates the rate of motion.
• The SI unit of speed is meters per second (m/s).
• For example, a car traveling 60 km in 1 hour has a speed of 60 km/h.

Q22. Answer: (d) Oxidation

The correct answer is Oxidation.

Key Points

• Oxidation is a process where oxygen reacts with minerals, particularly metallic elements such as iron, leading to chemical changes in rocks and soil.
• This reaction often leads to the formation of oxides, such as rust in iron-bearing minerals, weakening the rock structure and contributing to its breakdown.
• Oxidation is a prominent form of chemical weathering observed in environments with sufficient moisture and oxygen availability.
• Common examples of oxidation in nature include the reddish coloration seen in rocks containing iron minerals due to the formation of iron oxides.
• This process plays a vital role in shaping landscapes and altering the composition of rocks over time.

Additional Information

• Frost Action:
• Frost action is a physical weathering process where water enters cracks in rocks, freezes, and expands.
• The expansion of ice exerts pressure on the rock, causing it to break apart over time.
• This process is common in colder climates and contributes to the mechanical breakdown of rocks rather than chemical alteration.
• Exfoliation:
• Exfoliation is a physical weathering process where rocks peel or flake off in sheets due to temperature changes, pressure release, or mechanical stress.
• This phenomenon typically occurs in regions with significant diurnal temperature variations, causing rocks to expand during the day and contract at night.
• Abrasion:
• Abrasion is another form of physical weathering where rocks and sediments grind against each other, wearing down surfaces over time.
• This process is commonly observed in riverbeds, beaches, or areas with strong winds carrying sand and particles.
• Like frost action and exfoliation, abrasion is a mechanical process and does not involve chemical changes in the rock composition.

Q23. Answer: (c) Amaravati, Andhra Pradesh

The correct answer is Amaravati, Andhra Pradesh.

Key Points

• In April 2025, the Andhra Pradesh government proposed to establish India's first Quantum Computing Village in Amaravati, the capital city under the Real-Time Governance Society (RTGS).
• The Quantum Computing Village aims to harness quantum computing technology to revolutionize areas such as data analysis, cryptography, and artificial intelligence.
• The project is expected to position Andhra Pradesh as a hub for advanced technology research and innovation in India.
• The Real-Time Governance Society (RTGS) is an initiative of the Andhra Pradesh government aimed at leveraging technology for efficient governance and service delivery.
• The village will focus on creating collaborations with global technology leaders and academic institutions to further advancements in quantum computing and its applications.

Additional Information

• Bengaluru, Karnataka:
• Bengaluru is known as India’s Silicon Valley and a hub for technology and innovation.
• The city hosts numerous tech companies, research centers, and academic institutions specializing in advanced computing and

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engineering.

• Thiruvananthapuram, Kerala:

• Thiruvananthapuram is the capital of Kerala and is home to the Technopark, one of India's largest IT parks.

• The city also has a strong focus on research in space science due to the Indian Space Research Organisation (ISRO) being headquartered there.

• Patna, Bihar:

• Patna, the capital of Bihar, is a growing city with a focus on education and infrastructure development.

• Quantum Computing:

• Quantum computing is a field of computing that uses quantum-mechanical phenomena, such as superposition and entanglement, to perform operations on data.

• It has applications in areas such as cryptography, optimization, artificial intelligence, and complex simulations.

• Governments worldwide, including India, are investing in quantum computing research to gain a competitive edge in technology and innovation.

Q24. Answer: (a) Grid-pattern layout

The correct answer is Grid-pattern layout.

Key Points

• Grid-pattern layout is a hallmark of Indus Valley Civilization cities, showcasing advanced urban planning.

• The streets were designed to intersect at right angles, forming a grid system, which ensured organized city planning and efficient movement.

• Covered drains were constructed alongside streets to maintain hygiene and prevent flooding, reflecting the civilization's emphasis on sanitation.

• Major cities like Mohenjo-Daro and Harappa displayed this layout, with residential and commercial areas systematically organized.

• This urban feature highlights the technological and administrative proficiency of the Indus Valley people.

Additional Information

• Indus Valley Civilization:

• Citadel & Lower Town: Cities were generally split into a raised "Citadel" (with public/administrative buildings) and a larger "Lower Town" for residences, suggesting social stratification.

• Sophisticated Drainage: A covered, underground drainage system connected house drains (from kitchens/bathrooms) to main street sewers, with manholes for cleaning, highlighting focus on hygiene.

• Standardized Construction: Uniform, baked bricks of consistent sizes were used for buildings, roads, and drains, showing advanced standardization.

• Residential Planning: Houses often had courtyards, bathrooms, and sometimes two stories, with doors opening onto smaller lanes, not main streets.

• Public Structures: Large structures like granaries, assembly halls, and the famous Great Bath (Mohenjo-Daro) served communal purposes.

Q25. Answer: (c) 2014

The correct answer is 2014.

Key Points

• The PM SVANidhi scheme, launched by the Ministry of Housing and Urban Affairs, is specifically designed to provide affordable working capital loans to street vendors to help them resume their livelihoods post the COVID-19 pandemic.

• The scheme is available only for states and union territories that have notified rules and a scheme under the Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014.

• The PM SVANidhi scheme provides an initial loan of up to Rs. 10,000, which can be repaid in monthly installments over one year, with an interest subsidy of 7% per annum.

• The scheme also encourages vendors to adopt digital payment methods by offering cashback incentives of up to Rs. 1,200 per year.

Additional Information

• Street Vendors (Protection of Livelihood and Regulation of Street Vending) Act, 2014

• This act was enacted to safeguard the livelihoods of street vendors and regulate their operations to ensure they can work in designated areas without harassment.

• The act mandates the formation of Town Vending Committees (TVCs) in each local authority to identify vendors, issue identity cards, and allocate vending zones.

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• It aims to strike a balance between the interests of vendors and the need to maintain public spaces for other urban residents.

Q26. Answer: (a) ROM – Read Only Memory – Stores boot instructions needed when the computer is powered on

The correct answer is ROM – Read Only Memory – Stores boot instructions needed when the computer is powered on.

Key Points

• ROM (Read Only Memory) is a non-volatile memory that retains data even when the computer is powered off.

• It stores essential instructions and data necessary for the computer to boot up, commonly known as the firmware or BIOS (Basic Input/Output System).

• The primary function of ROM is to store boot instructions, making it critical for initializing hardware and loading the operating system.

• Unlike RAM, the contents of ROM cannot be modified or erased during normal operation, ensuring the integrity of the boot process.

• ROM is utilized in various embedded systems, gaming consoles, and other devices where permanent instructions are required.

Additional Information

• PCB – Printed Chip Base

• The correct abbreviation for PCB is Printed Circuit Board, not Printed Chip Base.

• PCB is a physical board used to connect electronic components using conductive pathways, tracks, and pads.

• It acts as the foundation for most electronic devices but does not perform the function of transferring data from the CPU to the display.

• CPU – Central Processing Unit

• The CPU is the brain of the computer and is responsible for executing instructions from programs.

• It does not store user files permanently; this function is typically handled by storage devices like HDDs or SSDs.

• The CPU processes data, performs calculations, and coordinates the operations of the entire computer system.

• RAM – Read Access Memory

• The correct term for RAM is Random Access Memory, not Read Access Memory.

• RAM is a volatile memory that temporarily stores data and instructions that the CPU needs while running programs.

• It does not retain data after the computer is powered off, unlike what is stated in the option.

Q27. Answer: (b) Uttar Pradesh

The correct answer is Uttar Pradesh.

Key Points

• Uttar Pradesh's physiography is predominantly defined by the Indo-Gangetic Plain, one of the most fertile and extensive plains in the world.

• The Indo-Gangetic Plain in Uttar Pradesh is formed by the alluvial deposits of the Ganga, Yamuna, and their tributaries such as the Gomti, Ghaghara, and Rapti rivers.

• It is characterized by flat terrain, fertile soil, and a large number of perennial rivers, making it a key agricultural region in India.

• This plain is divided into three subregions: Upper Ganga Plain, Middle Ganga Plain, and Lower Ganga Plain, all of which are present in Uttar Pradesh.

• The state contributes significantly to India's agricultural output due to its location in this fertile plain, producing crops like wheat, rice, sugarcane, and pulses.

Additional Information

• Rajasthan:

• Rajasthan's physiography is dominated by the Thar Desert, also known as the Great Indian Desert, and the Aravalli Range, which is one of the oldest mountain ranges in the world.

• The region is characterized by sandy terrain, dunes, and minimal vegetation, with semi-arid and arid climatic conditions.

• The western part of Rajasthan consists of desert regions, while the southeastern part is more fertile due to the Chambal River basin.

• Sikkim:

• Sikkim is a Himalayan state known for its rugged and mountainous terrain, with peaks like Kanchenjunga, the third-highest mountain in the world.

• The state is also home to numerous glaciers, alpine meadows, and dense forests.

• It lies within the Eastern Himalayas and is characterized by steep valleys and swift rivers such as the Teesta and Rangit.

• Jharkhand:

• Jharkhand's physiography is dominated by the Chotanagpur Plateau, which is rich in minerals like coal, iron ore, and mica.

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• The state is characterized by undulating terrain, forests, and numerous rivers like the Damodar, Subarnarekha, and Koel.

• It is also known for its waterfalls, such as Hundru Falls and Dassam Falls, and is predominantly a plateau region with a tropical climate.

Q28. Answer: (d) Gowalia Tank Maidan, Bombay

The correct answer is Gowalia Tank Maidan, Bombay.

Key Points

• Gowalia Tank Maidan, later renamed August Kranti Maidan, is historically significant as the place where Mahatma Gandhi launched the Quit India Movement on August 8, 1942.

• It was here that Aruna Asaf Ali hoisted the Indian National flag to signal the beginning of one of the largest mass movements against British colonial rule.

• Aruna Asaf Ali played a significant role in the movement and was later referred to as the "Grand Old Lady of Indian Independence."

• The Quit India Movement, also known as the "Bharat Chhodo Andolan," was a major civil disobedience movement aimed at ending British rule in India.

• The event at Gowalia Tank Maidan symbolized national unity and resistance against British imperialism, making it a landmark in India's struggle for independence.

Additional Information

• Quit India Movement:

• Launched by Mahatma Gandhi on August 8, 1942, at the Bombay Session of the All-India Congress Committee, it called for an end to British rule in India.

• The movement was marked by mass protests, strikes, and acts of civil disobedience across the country.

• Despite widespread arrests and suppression, it laid the foundation for India’s eventual independence in 1947.

Q29. Answer: (d) Central Administrative Tribunal

The correct answer is Central Administrative Tribunal (CAT).

Key Points

• The Central Administrative Tribunal (CAT) was established in 1985 under Article 323-A of the Indian Constitution to adjudicate disputes and complaints concerning recruitment and service conditions of public servants.

• It deals specifically with service matters of civil servants, such as promotions, transfers, pay scales, disciplinary actions, and other employment-related grievances.

• CAT has jurisdiction over Central Government employees, except members of the armed forces, officers and employees of the Supreme Court, and employees of state government services.

• The tribunal functions under the Administrative Tribunals Act, 1985, and its decisions are binding, though appeals can be made to the High Court or Supreme Court in specific cases.

• It aims to provide speedy and effective redressal of grievances to government employees, ensuring judicial efficiency and reducing the burden on regular courts.

Additional Information

• Income Tax Appellate Tribunal (ITAT)

• It is a quasi-judicial body set up in 1941 to handle appeals under the Income Tax Act, 1961, and other direct tax laws.

• It adjudicates disputes between taxpayers and the Income Tax Department regarding tax assessments, penalties, and other issues.

• ITAT decisions are appealable to the High Court, but only on substantial questions of law.

• Armed Forces Tribunal (AFT)

• It was established in 2009 under the Armed Forces Tribunal Act, 2007, to adjudicate disputes and complaints related to the service matters and pensions of armed forces personnel.

• AFT ensures that military personnel have a specialized forum for resolving grievances quickly and fairly.

• Its jurisdiction includes appeals against court-martial decisions, but it does not cover the recruitment of armed forces personnel.

• National Green Tribunal (NGT)

• NGT was established in 2010 under the National Green Tribunal Act, 2010, to handle cases related to environmental protection and conservation of forests and other natural resources.

• It is a specialized body that ensures the effective implementation of environmental laws in India.

• NGT decisions are binding and enforceable, and appeals can only be made to the Supreme Court.

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Q30. Answer: (c) 1.602176634 x 10^(-19) C

The correct answer is 1.602176634 x 10^(-19) C.

Key Points

• The elementary charge is the charge of a single electron or proton, and its value has been precisely defined as 1.602176634 x 10^(-19) coulombs (C).

• This value is an important constant in physics and chemistry, used in defining the ampere based on the International System of Units (SI).

• The definition of the ampere relies on fixing the numerical value of the elementary charge to exactly 1.602176634 x 10^(-19) C.

• This constant is established by the International Committee for Weights and Measures (CIPM) and is part of the updated SI system introduced in 2019.

• The elementary charge plays a critical role in understanding electromagnetic phenomena and is integral to equations in quantum mechanics and electrodynamics.

Additional Information

• Elementary Charge (ee

)

• Definition: The magnitude of charge of one proton (positive) or one electron (negative).

• Symbol: ee

.

• SI Value: 1.602176634×10−191.602176634×10−19

C.

• Quantization: All electric charges are integer multiples of ee

(e.g., 2e2e

, −3e−3e

).

• SI Unit of Charge (Coulomb)

• Definition: The total electric charge, defined in relation to the elementary charge and base units.

• Symbol: C.

• Relationship to ee

: 1 Coulomb is approximately 6.24×10186.24×1018

elementary charges (1/e1/e

).

• Redefinition (2019): The elementary charge ee

became one of the fundamental constants used to define SI base units, fixing its value

Q31. Answer: (c) Industry and Services

The correct answer is Industry and Services.

Key Points

• Liberalisation in India, initiated in 1991, had a profound impact on the Industry and Services sectors. It opened up these sectors to global competition, investments, and privatization.

• The government reduced restrictions on industrial licensing, enabling private and foreign players to enter industries like telecommunications, banking, and manufacturing.

• Foreign Direct Investment (FDI) was encouraged in sectors like automobiles, pharmaceuticals, and IT services, which led to exponential growth in these industries.

• The services sector, particularly information technology (IT) and business process outsourcing (BPO), witnessed a significant boom, making India a global hub for IT services.

• The reforms also included reduction of tariffs, removal of trade barriers, and deregulation of industries, which enhanced industrial productivity and service exports.

Additional Information

• Public Distribution System (PDS)

• The Public Distribution System primarily deals with the distribution of essential commodities like rice, wheat, and sugar to the underprivileged sections of society through a network of fair price shops.

• While liberalisation did not directly impact PDS, reforms in agriculture and trade policies indirectly influenced food grain procurement and subsidy distribution.

• PDS remains a government-driven welfare program, relatively insulated from the effects of liberalisation.

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• Agriculture

• Agriculture was not liberalised to the same extent as industry and services due to its critical role in ensuring food security and rural livelihoods.

• However, some indirect impacts of liberalisation were observed, such as changes in export-import policies for agricultural commodities and the introduction of contract farming.

• Even after liberalisation, agriculture continues to rely heavily on government subsidies and support mechanisms.

• IT Sector

• The IT sector is a part of the broader services industry, and its remarkable growth was one of the key outcomes of liberalisation.

• Policies promoting foreign investment, deregulation, and the establishment of IT parks contributed to the rapid expansion of this sector.

• Companies like Infosys, Wipro, and TCS emerged as global IT leaders post-liberalisation.

Q32. Answer: (c) Right-click the file → Select Delete

The correct answer is Right-click the file → Select Delete.

Key Points

• In Microsoft Windows, deleting a file via the right-click menu and selecting "Delete" will move the file to the Recycle Bin, instead of permanently deleting it.

• The Recycle Bin acts as a temporary storage, allowing users to recover files that were deleted accidentally.

• Files in the Recycle Bin can be restored to their original location or permanently deleted by emptying the Recycle Bin.

• This method is a part of Windows' safety mechanism to prevent accidental data loss.

• Keyboard shortcuts like Shift + Delete bypass the Recycle Bin and permanently delete the file, but the "Delete" option from the right-click menu does not.

Additional Information

• Recycle Bin in Windows

• The Recycle Bin is a system folder in Windows that temporarily stores deleted files and folders.

• Files can be recovered from the Recycle Bin unless the bin is emptied or the files are deleted permanently (e.g., using Shift + Delete).

• Its main purpose is to provide a safeguard against accidental deletion of important data.

Q33. Answer: (d) Finland

The correct answer is Finland.

Key Points

• Finland has been ranked as the happiest country in the world for six consecutive years, according to the 2024 World Happiness Report.

• The ranking is based on factors such as social support, income, health, freedom, generosity, and absence of corruption.

• Finland's high levels of trust in government and institutions, coupled with strong social cohesion, contribute significantly to its happiness ranking.

• Finnish citizens enjoy excellent healthcare, education, and work-life balance, which foster overall well-being.

• The country's emphasis on environmental sustainability and natural beauty also plays a vital role in enhancing the quality of life.

Additional Information

• World Happiness Report

• The World Happiness Report is an annual publication by the United Nations Sustainable Development Solutions Network.

• It uses survey data from the Gallup World Poll to assess happiness levels in various countries.

• The report evaluates factors such as GDP per capita, social support, life expectancy, freedom, generosity, and perceptions of corruption.

• It aims to provide insights into well-being and guide policymakers in fostering happiness and sustainable development.

Q34. Answer: (c) Relative strength of the magnetic field

The correct answer is Relative strength of the magnetic field.

Key Points

• The closeness of magnetic field lines is directly proportional to the relative strength of the magnetic field. The closer the field lines, the stronger the magnetic field in that region.

• In regions where magnetic field lines are widely spaced, the magnetic field strength is weaker.

• This concept is fundamental in visualizing magnetic fields, as field lines provide a graphical representation of the intensity and direction of the field.

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• For example, near a bar magnet, the magnetic field is stronger at the poles, and the field lines are denser in these areas.

• The density of magnetic field lines also helps in determining the behavior of materials placed in the field, such as ferromagnetic substances which align with stronger field regions.

Additional Information

• Magnetic Field Lines

• Magnetic field lines are imaginary lines used to represent the magnetic field. They are drawn such that the tangent to the line at any point gives the direction of the magnetic field.

• Key properties include:

• They never intersect each other.

• They form closed loops from the north pole to the south pole outside the magnet and return to the north pole inside the magnet.

• Their density represents the strength of the magnetic field.

• They aid in visualizing and analyzing the behavior of magnetic fields in various scenarios, such as around bar magnets, solenoids, and current-carrying conductors.

Q35. Answer: (d) Birsa Munda

The correct answer is Birsa Munda.

Key Points

• Birsa Munda was a tribal freedom fighter, religious leader, and folk hero who belonged to the Munda community in Jharkhand, India.

• He led the Munda Ulgulan (rebellion) in the 1890s against British colonial rule and their exploitative policies that severely impacted the rights of tribal people.

• The rebellion aimed to establish Munda Raj and drive out the British, as well as reform tribal society by eradicating superstitions and promoting unity among the tribes.

• Birsa Munda advocated for the protection of tribal lands and fought against the “Zamindari” system, which allowed landlords to exploit tribal laborers.

• His efforts are regarded as one of the first organized movements against British oppression, and he is remembered as a symbol of tribal pride and resilience.

Additional Information

• Tana Bhagat:

• Tana Bhagat was a tribal leader and reformer from the Oraon community in Jharkhand.

• He started the Tana Bhagat Movement in 1914, which opposed British rule and sought to revive tribal traditions and improve the socio-economic conditions of the Oraon community.

• The movement was inspired by Gandhian principles of non-violence and civil disobedience.

• Gunda Dhur:

• Gunda Dhur was a tribal leader from Bastar (present-day Chhattisgarh) who led the Bastar Rebellion in 1910.

• The rebellion was a tribal uprising against the British policies of forest exploitation, forced labor, and land revenue collection.

• He is remembered for his resistance to colonial authorities and his role in uniting the tribal communities of Bastar.

• Tilka Manjhi:

• Tilka Manjhi was a tribal leader from the Santhal community in present-day Bihar and Jharkhand.

• He led the Santhal Rebellion in 1784 against British colonial exploitation and oppression.

• Tilka Manjhi is regarded as one of India’s earliest freedom fighters, and his resistance inspired later tribal uprisings.

• Munda Ulgulan:

• The Munda Ulgulan, also known as the Munda Rebellion (1899–1900), was a significant tribal uprising led by Birsa Munda.

• The rebellion was a response to the British colonial policies that disrupted the socio-economic and cultural fabric of the tribal communities.

• The revolt emphasized the establishment of tribal autonomy, the protection of land rights, and freedom from British exploitation.

Q36. Answer: (b) Socio-economic problems

The correct answer is Socio-economic problems.

Key Points

• Arthashastra, authored by Kautilya (Chanakya), is a treatise on statecraft, economic policy, and military strategy during ancient India, particularly the Mauryan Empire.

• It provides guidelines for addressing socio-economic problems, including taxation, agriculture, trade, labor management, and welfare policies.

• The text emphasizes the importance of maintaining social order and economic stability as a foundation for governance.

• Key socio-economic issues covered include land ownership, fair wages, protection of artisans, and the prevention of exploitation of citizens.

• Kautilya's focus was on ensuring the prosperity of the state while addressing the well-being of its citizens, particularly in terms of economic equality and justice.

Additional Information

• Key Contributions & Ideas of Kautilya:

• Arthashastra: A comprehensive treatise on governance, law, economics, warfare, and diplomacy, covering administration, finance, security, and army setup.

• Statecraft & Leadership: Advocated for wise, vigilant, and decisive rulers, stressing the importance of a strong central authority but also the interdependence of state elements (King, Minister, Territory, City, Treasury, Army, Allies).

• Saptanga Theory: Defines the seven limbs of the state, highlighting the king's supreme role but acknowledging the need for other elements.

• Mandala Theory: A framework for foreign policy, viewing neighboring states as potential adversaries and their adversaries as friends, guiding alliances and conflicts.

• Diplomacy & Espionage: Utilized spies and secret agents extensively to gather intelligence, sow dissent, and manage interstate relations, treating ambassadors as potential spies.

Q37. Answer: (b) Alpha Tocol Engineering Services

The correct answer is Alpha Tocol Engineering Services.

Key Points

• Alpha Tocol Engineering Services is a Bengaluru-based private company specializing in aerospace manufacturing and engineering services.

• The firm produced the first rear fuselage for the Light Combat Aircraft (LCA) Mk1A, which was handed over to Hindustan Aeronautics Limited (HAL) in Bengaluru.

• This marks a significant milestone in India's defense manufacturing sector, as it reflects the growing participation of private firms in defense production.

• The rear fuselage is a critical structural component of the aircraft, emphasizing the precision and advanced engineering capabilities demonstrated by Alpha Tocol Engineering Services.

• HAL's collaboration with private firms like Alpha Tocol aims to expedite production timelines and boost India's self-reliance in defense manufacturing under the "Make in India" initiative.

Additional Information

• Light Combat Aircraft (LCA) Mk1A

• The LCA Mk1A is an upgraded variant of the Tejas aircraft, developed by Hindustan Aeronautics Limited (HAL).

• It incorporates advanced avionics, radar systems, and improved operational capabilities compared to earlier versions.

• The aircraft is designed to strengthen India's air force and reduce dependence on foreign fighter jets.

• The involvement of private firms in manufacturing components for the LCA Mk1A aligns with India's focus on indigenization and self-reliance in defense production.

Q38. Answer: (c) Mahatma Gandhi

The correct answer is Mahatma Gandhi.

Key Points

• Mahatma Gandhi was the sole representative of the Indian National Congress at the Second Round Table Conference in 1931.

• The conference was held in London from September 7 to December 1, 1931 to discuss constitutional reforms in British India.

• Gandhi attended the conference as the representative of the Congress after signing the Gandhi-Irwin Pact, which ended the Civil Disobedience Movement temporarily.

• During the conference, Gandhi advocated for Indian self-rule (Swaraj) and opposed the idea of separate electorates for minorities, particularly for Dalits, which was being promoted by Dr. B.R. Ambedkar.

• The conference ended without achieving any significant progress on constitutional reforms due to fundamental disagreements between Indian leaders and British authorities.

Additional Information

• Dr. B.R. Ambedkar:

• Dr. Ambedkar was also present at the Second Round Table Conference, but he represented the Depressed Classes, not the Indian National Congress.

• He strongly advocated for separate electorates for Dalits to ensure their political representation and safeguard their rights.

• His views clashed with Gandhi's, leading to significant debates during the conference.
• Chittaranjan Das:
• Chittaranjan Das, popularly known as Deshbandhu, was a prominent leader of the Indian freedom struggle.
• He passed away in 1925, years before the Second Round Table Conference took place.
• Das was a key figure in the Swaraj Party, which aimed to achieve dominion status for India by entering legislative councils.
• Jawaharlal Nehru:
• Jawaharlal Nehru was a senior Congress leader during the time, but he did not attend the Second Round Table Conference.
• He was actively involved in the Civil Disobedience Movement and other freedom struggle activities during this period.
• His diplomatic skills and leadership later played a pivotal role in shaping independent India.

Important Points

• Background of the Round Table Conferences:
• The Round Table Conferences (1930–1932) were a series of meetings organized by the British government to discuss constitutional reforms in India.
• While the First Round Table Conference (1930) saw limited Indian participation, the Second Round Table Conference (1931) included representatives from various Indian communities and political groups, including Gandhi.
• The conferences ultimately failed to bridge the gap between the British government and Indian leaders, leading to continued protests and demands for independence.

Q39. Answer: (c) Rising imports outpacing exports and widening the trade deficit

The correct answer is Rising imports outpacing exports and widening the trade deficit.

Key Points

• Between 1991 and 2020, India's import volumes grew significantly due to factors like industrial growth, increasing consumption, and liberalization policies.
• Exports during this period also increased, but not at a pace equivalent to imports, leading to a widening trade deficit.
• The trade deficit represents the excess of imports over exports and has been a characteristic of India's international trade during this time.
• Key reasons for the rising imports include dependence on crude oil, machinery, electronics, and gold, which are critical for economic growth but not produced sufficiently domestically.
• Economic reforms such as liberalization in 1991 played a major role in this trend, opening up markets and increasing global trade participation.
• India’s export composition has shifted toward services like IT and software, but merchandise exports lagged behind in comparison to imports.

Additional Information

• Export Trends
• Strong Growth: Total exports (goods & services) hit record highs, exceeding $824 billion in FY 2024-25, with services (IT, etc.) leading the surge.
• Key Sectors: Engineering goods, electronics, pharma, and agriculture are major contributors, with electronics showing rapid expansion.
• Top Markets: USA, UAE, China, and the Netherlands are key destinations.
• Recent Dip: October 2025 saw a decline due to US tariffs, impacting textiles, gems, and shrimp shipments.
• Import Trends
• Dominant Imports: Petroleum & products, gold, and electronic goods are primary imports.
• Key Sources: China, UAE, Russia, and the US are major suppliers.
• Growing Electronics: Electronics imports are rising, mirroring domestic demand.

Q40. Answer: (d) Retreating Monsoon

The correct answer is Retreating Monsoon.

Key Points

• The phenomenon of "October heat" occurs due to the retreating monsoon, where monsoon winds withdraw from the Indian subcontinent.
• This phase is marked by clear skies, high temperatures, and humid conditions, especially during October.
• The retreating monsoon is characterized by the movement of dry winds from the northwest, which replace the moist monsoon winds.
• During this period, the land is moist from the monsoon rains, and the high temperatures create conditions for increased humidity, leading to the term "October heat."

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• The retreating monsoon also contributes to the formation of cyclones in the Bay of Bengal, which typically occur during October and November.

Additional Information

• Cyclonic Depressions of Arabian Sea

• Cyclonic depressions in the Arabian Sea are weather systems that form due to low-pressure areas.

• While these depressions do occur, their formation is more prominent during the pre-monsoon (April-May) and post-monsoon (October-November) periods, not directly related to October heat.

• The cyclonic activity in the Arabian Sea is typically less frequent compared to the Bay of Bengal.

• Monsoon Wind striking the Western Coast

• This option refers to the southwest monsoon winds, which bring rainfall to the western coast of India from June to September.

• These winds lose their strength by October as the monsoon season recedes, giving way to retreating monsoon winds. Thus, it is unrelated to October heat.

• Cyclonic Depressions of Bay of Bengal

• While cyclonic depressions in the Bay of Bengal are common during the retreating monsoon season (October-November), they are not directly responsible for October heat.

• These depressions often lead to heavy rainfall and cyclones along the eastern coast of India.

• However, they are an indirect result of the retreating monsoon rather than a cause of October heat.

Q41. Answer: (d) 26

Shortcut Trick

To find consecutive natural numbers whose product is 650, find the square root of 650.

$\sqrt{650} \approx 25.49$

The numbers must be around 25 and 26.

Check: 25 × 26 = 650.

The greater number is 26.

Therefore The correct answer is 26.

Alternate Method

Given: Product of two consecutive natural numbers = 650.

Let the two consecutive natural numbers be x and (x + 1).

Formula: $x \times (x + 1) = 650$

$\Rightarrow x^2 + x - 650 = 0$

$\Rightarrow x^2 + 26x - 25x - 650 = 0$

$\Rightarrow x(x + 26) - 25(x + 26) = 0$

$\Rightarrow (x + 26)(x - 25) = 0$

$\Rightarrow x = 25$ or $x = -26$

Since the numbers are natural numbers, x = 25.

=> Smaller number = 25

=> Greater number = x + 1 = 25 + 1 = 26.

Therefore The correct answer is 26.

Additional Information

Consecutive Numbers

Numbers that follow each other in order from smallest to largest without any gaps (e.g., n, n+1, n+2).

Quadratic Roots

For a quadratic equation $ax^2 + bx + c = 0$, the product of roots is c/a and the sum is −b/a.

Natural Numbers

Positive integers starting from 1 (1, 2, 3, ...) used for counting and ordering.

Q42. Answer: (a) 37

Shortcut Trick

Total Weight of Ram, Anwar, Amit = 45 × 3 = 135 kg.

Combined Weight of (Ram + Anwar) and (Anwar + Amit) = (44 × 2) + (42 × 2).

Total of subsets = 88 + 84 = 172 kg.

Weight of Anwar (overlapping person) = Sum of subsets − Total sum = 172 − 135 = 37 kg.

Therefore The correct answer is 37 kg.

Alternate Method

Given:

Average weight of (Ram + Anwar + Amit) = 45 kg

Average weight of (Ram + Anwar) = 44 kg

Average weight of (Anwar + Amit) = 42 kg

Calculations:

=> Total Weight of (Ram + Anwar + Amit) = 45 × 3 = 135 kg

=> Weight of (Ram + Anwar) = 44 × 2 = 88 kg

=> Weight of (Anwar + Amit) = 42 × 2 = 84 kg

=> Let weights be R, Anwar, and Amit respectively.

=> (R + Anwar) + (Anwar + Amit) = 88 + 84

=> R + 2 × Anwar + Amit = 172 kg

=> Anwar = (R + 2 × Anwar + Amit) − (R + Anwar + Amit)

=> Anwar = 172 − 135

=> Anwar = 37 kg

Therefore The correct answer is 37 kg.

Additional Information

Basic Average Formula

Average = (Sum of all observations) ÷ (Number of observations). Sum = Average × Count.

Overlapping Middle Term

If in a group of 'n' people, the average of first 'm' and last 'k' are given such that (m + k) = n + 1, the middle term = (Sum of m) + (Sum of k) − (Total Sum of n).

Deviation Method

Anwar's Weight = Total Average + Deviation1 + Deviation2 = 45 + 2 × (44 − 45) + 2 × (42 − 45) = 45 − 2 − 6 = 37 kg.

Q43. Answer: (d) 69^(−28)

Given:

69^(−4) ÷ 69^(15) × 69^(−9)

Formula Used:

a^m ÷ a^n = a^(m−n)

a^m × a^n = a^(m+n)

Calculation:

=> 69^(−4) ÷ 69^(15) = 69^(−4−15)

=> 69^(−19)

=> 69^(−19) × 69^(−9) = 69^(−19−9)

=> 69^(−28)

=> 1 ÷ 69^(28)

=> 69−28

Therefore The correct answer is 69^(-28).

Q44. Answer: (a) Rs. 38,640

Shortcut Trick

Net multiplier for 16% discount = (100 − 16) ÷ 100 = 0.84

Final Amount = Price × Multiplier = 46000 × 0.84

Final Amount = 460 × 84 = 38640

Therefore The correct answer is Rs. 38,640.

Alternate Method

Given: Marked Price (MP) = Rs. 46,000, Discount% = 16%.

Formula: Discount Amount = (MP × Discount%) ÷ 100 | Selling Price (SP) = MP − Discount Amount

=> Discount Amount = (46000 × 16) ÷ 100 = 460 × 16

=> Discount Amount = Rs. 7,360

=> Final Amount = 46000 − 7360 = 38640

Therefore The correct answer is Rs. 38,640.

Additional Information

Trade Discount

It is a reduction in the list price or catalog price of an article, allowed by a manufacturer to a wholesaler or by a wholesaler to a retailer.

Selling Price Calculation

When a discount of d% is given on Marked Price (MP), then SP = MP × (100 − d) ÷ 100.

Q45. Answer: (b) 3 km/hr

Shortcut Trick

Let Amit's speed be S1 and S2. Speed ratio S1 : S2 = 1 : 2.

Since distance is constant, Time ratio T1 : T2 = 2 : 1.

Difference in units = 2 − 1 = 1 unit.

Actual Time difference = 8 hours (late) + 9 hours (early) = 17 hours.

Therefore 1 unit = 17 hours → Original time (T1) = 2 units = 34 hours.

Amit's speed = Distance ÷ Time = 102 ÷ 34 = 3 km/hr.

Therefore The correct answer is 3 km/hr.

Alternate Method

Given:Distance = 102 km. Case 1: Time_(Amit) − Time_(Vinay) = 8. Case 2: Time_(Vinay) − Time_(Amit_new) = 9.

Formula Used: Time = Distance ÷ Speed

=> Let Amit's speed be x km/hr and Vinay's speed be v km/hr.

=> (102/x) − (102/v) = 8 --- (Eq. 1)

=> (102/v) − (102/2x) = 9 --- (Eq. 2)

=> Adding Eq. 1 and Eq. 2: (102/x) − (102/2x) = 8 + 9

=> (102 − 51) / x = 17

=> 51 / x = 17

=> x = 51 ÷ 17 = 3 km/hr.

Therefore The correct answer is 3 km/hr.

Additional Information

Constant Distance Rule

When the distance is constant, the speed is inversely proportional to time (S1/S2 = T2/T1).

Time Difference Logic

If one person is 'Late' and later 'Early' relative to a fixed time, the total time difference is the sum of the late and early durations.

Average Speed

For two equal distances with speeds a and b, Average Speed = (2 × a × b) ÷ (a + b).

Q46. Answer: (d) cosA

Shortcut Trick

Put A = 90° is not possible due to tan/sec, so put A = 45°.

Numerator: (1 + 1/√2)(√2 − 1) = (√2 + 1)/√2 × (√2 − 1) = (2 − 1)/√2 = 1/√2

Denominator: √2(1 − 1/√2)(√2 + 1) = √2((√2 − 1)/√2)(√2 + 1) = (√2 − 1)(√2 + 1) = 1

Expression = (1/√2) / 1 = 1/√2. Since cos 45° = 1/√2, the answer is cos A.

Therefore The correct answer is cosA.

Alternate Method

Given: (1 + sin A)(sec A - tan A)/(cosec A(1 - cos A)(csc A + cot A))

Formula Used: $\sec^2 A - \tan^2 A = 1$ and $\csc^2 A - \cot^2 A = 1$

=> Numerator = (1 + sin A) × (1/cos A − sin A/cos A) = (1 + sin A)(1 − sin A) / cos A

=> Numerator = (1 − $\sin^2$ A) / cos A = $\cos^2$ A / cos A = cos A

=> Denominator = csc A(1 − cos A)(csc A + cot A)

=> Denominator = (csc A − csc A cos A)(csc A + cot A) = (csc A − cot A)(csc A + cot A)

=> Denominator = $\csc^2$ A − $\cot^2$ A = 1

=> Expression = cos A / 1 = cos A

Therefore The correct answer is cosA.

Additional Information

Trigonometric Identities

Standard Pythagorean identities: $\sin^2\theta + \cos^2\theta = 1$, $1 + \tan^2\theta = \sec^2\theta$, and $1 + \cot^2\theta = \csc^2\theta$.

Reciprocal Relations

$\sec\theta = 1/\cos\theta$, $\csc\theta = 1/\sin\theta$, and $\cot\theta = \cos\theta/\sin\theta$.

Q47. Answer: (c) 31

Shortcut Trick

Let Mother = M and Daughter = D.

Given 2: 4D = M − 4 => M = 4D + 4.

Substitute M in Given 1: 2(4D + 4) = 6D + 26 => 8D + 8 = 6D + 26.

Solving for D: 2D = 18 => D = 9 years.

Substitute D in M: M = 4(9) + 4 = 40 years. Difference = 40 − 9 = 31 years.

Therefore The correct answer is 31 years.

Alternate Method

Given:

Case 1: 2 × Mother = 6 × Daughter + 26

Case 2: 4 × Daughter = 1 × Mother − 4

Calculations:

=> From Case 2: M − 4D = 4 → (Eq. 1)

=> From Case 1: 2M − 6D = 26 => M − 3D = 13 → (Eq. 2)

=> Subtracting (Eq. 1) from (Eq. 2): (M − 3D) − (M − 4D) = 13 − 4

=> D = 9 years

=> Substitute D in (Eq. 1): M − 4(9) = 4 => M − 36 = 4 => M = 40 years

=> Difference = M − D = 40 − 9 = 31 years

Therefore The correct answer is 31 years.

Additional Information

Linear Equations in Ages

Problems involving two people's ages usually result in a system of two linear equations which can be solved by substitution or elimination.

Age Difference Constant

The difference between the ages of two people remains constant throughout their lives, regardless of how many years pass.

Ratio of Ages

If the ratio of ages is given for different time periods, use the concept of equalizing the parts representing the constant age difference.

Q48. Answer: (d) Rs. 1,24,592

Shortcut Trick

Total interest % for first case = 2.9 × 23/8 = 8.3375%.

Interest 8.3375% = Rs. 8,671 => 1% = Rs. 1,040.

New interest % for second case = 4.5 × 22/5 = 19.8%.

Payable Amount % = 100% + 19.8% = 119.8%.

Final Amount = 119.8 × 1,040 = Rs. 1,24,592.

Therefore The correct answer is Rs. 1,24,592.

Alternate Method

Given:

Case 1: Simple Interest (SI1) = Rs. 8,671, Time (T1) = 23/8 Years, Rate (R1) = 2.9%

Case 2: Rate (R2) = 4.5%, Time (T2) = 22/5 Years

Formula Used:

SI = (P × R × T) ÷ 100

Amount (A) = P + SI = P × (1 + (R × T) ÷ 100)

Calculations:

=> 8,671 = (P × 2.9 × 23/8) ÷ 100

=> 8,671 = (P × 66.7) ÷ 800

=> P = (8,671 × 800) ÷ 66.7 = 130 × 800 = Rs. 1,04,000

=> Simple Interest for Case 2 (SI2) = (1,04,000 × 4.5 × 22/5) ÷ 100

=> SI2 = 1,040 × 0.9 × 22 = 20,592

=> Amount = Principal + SI2 = 1,04,000 + 20,592

=> Amount = Rs. 1,24,592

Therefore The correct answer is Rs. 1,24,592.

Additional Information

Simple Interest Proportion

For a constant principal, the ratio of interests is SI1/SI2 = (R1 × T1) / (R2 × T2).

Amount Formula

The total amount payable is the sum of the principal and the interest earned: A = P + (P × R × T)/100.

Effective Rate of Interest

The total interest percentage over the entire duration is simply the product of Rate (R) and Time (T).

Q49. Answer: (c) -16/15

Shortcut Trick

Factor out the common multiplier 3: $3[(3x^2 - 6) - (3x^2 + 5x - 7)] = 19$

Subtract the expressions inside the bracket: $3[3x^2 - 6 - 3x^2 - 5x + 7] = 19$

Eliminate the quadratic terms: $3[-5x + 1] = 19$

Simplify and solve: $-15x + 3 = 19 \Rightarrow -15x = 16$

Therefore The correct answer is −16/15.

Alternate Method

Given: $3(3x^2 - 6) - 3(3x^2 + 5x - 7) = 19$

Apply the distributive property to expand the brackets:

$\Rightarrow (9x^2 - 18) - (9x^2 + 15x - 21) = 19$

Remove the parentheses and change the signs for the second term:

$\Rightarrow 9x^2 - 18 - 9x^2 - 15x + 21 = 19$

Combine like terms:

$\Rightarrow (9x^2 - 9x^2) - 15x + (-18 + 21) = 19$

$\Rightarrow -15x + 3 = 19$

Isolate the variable x by moving the constant to the right side:

$\Rightarrow -15x = 19 - 3$

$\Rightarrow -15x = 16$

$\Rightarrow x = -16/15$

Therefore The correct answer is −16/15.

Additional Information

Distributive Property

Multiplying a sum by a number is the same as multiplying each addend by the number and then adding the products: a(b + c) = ab + ac.

Linear Equations in One Variable

Equations where the highest power of the variable is 1. Standard form is ax + b = 0.

Combining Like Terms

Terms with the same variable and same exponent can be simplified by adding or subtracting their coefficients.

Q50. Answer: (d) Rs. 828

Shortcut Trick

The profit sharing ratio is equal to the investment ratio when the time period is constant.

Ratio of investments = 1130 : 1030 : 1840 = 113 : 103 : 184.

Sum of ratio parts = 113 + 103 + 184 = 400 units.

400 units = Rs. 1,800 => 1 unit = 1800 ÷ 400 = Rs. 4.5.

Uday's share (184 units) = 184 × 4.5 = Rs. 828.

Therefore The correct answer is Rs. 828.

Alternate Method

Given: Investment of Gopal = Rs. 1,130, Hema = Rs. 1,030, Uday = Rs. 1,840. Total Profit = Rs. 1,800.

Formula: Profit Share = (Individual Investment × Time) ÷ (Total Investment × Time)

=> Total Investment = 1130 + 1030 + 1840 = Rs. 4,000.

=> Uday's Profit Share = (Uday's Investment ÷ Total Investment) × Total Profit.

=> Uday's Profit Share = (1840 ÷ 4000) × 1800.

=> Uday's Profit Share = (184 ÷ 400) × 1800 = 184 × 4.5 = Rs. 828.

Therefore The correct answer is Rs. 828.

Additional Information

Partnership Ratios

In a partnership, if investments are P1, P2, P3 for time T1, T2, T3, the profit ratio is (P1×T1) : (P2×T2) : (P3×T3).

Simple vs Compound Partnership

Simple partnership involves equal time periods for all partners, while compound partnership involves different time durations for each investment.

Q51. Answer: (c) 2,200

Shortcut Trick

Let Monthly Salary be 100%.

Debt payment = 36% → Remaining = 64%.

Spending = 50% of 64% = 32% → Savings = 64% − 32% = 32%.

32% = Rs. 704 => 1% = 22 => 100% = Rs. 2200.

Therefore The correct answer is Rs. 2200.

Alternate Method

Given:

Debt Repayment = 36% of Monthly Salary

Savings = Rs. 704 (which is 50% of the Remaining Salary)

Calculations:

=> Let Salary = S

=> Remaining Salary = S − (0.36 × S) = 0.64S

=> Savings = 50% of 0.64S = 0.50 × 0.64S = 0.32S

=> 0.32S = 704

=> S = 704 ÷ 0.32

=> S = 70400 ÷ 32

=> S = 2200

Therefore The correct answer is Rs. 2200.

Additional Information

Successive Percentage Change

When a value is reduced by x% and then the remainder is reduced by y%, the final value is Base × (1 − x/100) × (1 − y/100).

Percentage to Fraction Conversion

To simplify calculations, use 36% = 9/25 and 50% = 1/2. Remaining = (1 − 9/25) = 16/25. Savings = 1/2 × 16/25 = 8/25.

Concept of Remaining Value

Always calculate the next percentage on the updated base unless specified as percentage of total income.

Q52. Answer: (c) 6.3 km

Shortcut Trick

Speed = 21 km/hr

Time = 18 minutes = 18/60 hours = 0.3 hours

Distance (Length) = Speed × Time

=> 21 × 0.3 = 6.3 km

Therefore The correct answer is 6.3 km.

Alternate Method

Given:

Speed of the car = 21 km/hr

Time taken to cross = 18 minutes

Formula Used:

Distance = Speed × Time

Calculations:

=> Convert Time into hours: 18 minutes = 18/60 hours

=> Time = 3/10 hours = 0.3 hours

=> Length of bridge = 21 km/hr × 0.3 hours

=> Length of bridge = 6.3 km

Therefore The correct answer is 6.3 km.

Additional Information

Unit Conversion

To convert km/hr to m/s, multiply by 5/18. To convert minutes to hours, divide by 60.

Relative Speed

When two objects move in the same direction, relative speed is the difference. In opposite directions, it is the sum.

Average Speed

For the same distance covered at speeds x and y, Average Speed = 2xy/(x + y).

Q53. Answer: (a) 23

Given:

138 ÷ {13 + 7 × (3 - 4)}

Formula Used:

Order of operations: Parentheses → Multiplication/Division → Addition/Subtraction

Calculation:

[138 ÷ {13 + 7 × (3 − 4)}]

=> [138 ÷ {13 + 7 × (-1)}]

=> [138 ÷ {13 - 7}]

=> [138 ÷ {6}]

=> 138 ÷ 6 = 23

Therefore The correct answer is 23.

Q54. Answer: (c) 185/253

Shortcut Trick

Total Work = LCM(11, 23) = 253 units.

Efficiency: A = 23, B = 11. Combined Efficiency = 34 units/day.

Work done in 2 days = 34 × 2 = 68 units.

Work left = 253 − 68 = 185 units.

Fraction of work left = 185/253.

Therefore The correct answer is 185/253.

Alternate Method

Given: Time taken by A = 11 days, Time taken by B = 23 days.

Formula Used: Work Done = Efficiency × Time | Fraction Left = 1 − (Work Done / Total Work)

Person	Days	Total Work	Efficiency
A	11	253	23
B	23	11	

=> Combined efficiency of A and B = 23 + 11 = 34 units/day

=> Work done in 2 days = 34 × 2 = 68 units

=> Remaining work = 253 − 68 = 185 units

=> Fraction of work left = 185 / 253

Therefore The correct answer is 185/253.

Additional Information

Work and Efficiency Relation

Efficiency is inversely proportional to the time taken to complete the work. Efficiency = Total Work ÷ Time.

Fractional Work Method

If a person does work in 'n' days, work done in 1 day is 1/n. Work left after 'd' days is 1 − (d/n).

Combined Work Formula

If A takes 'x' days and B takes 'y' days, they together take (xy)/(x + y) days to finish the work.

Q55. Answer: (a) 89.9

Shortcut Trick

To find the LCM of decimals, make the number of decimal places equal.

Numbers: 2.900 and 0.031

Treat them as integers: 2900 and 31.

Since 31 is a prime number, LCM = 2900 × 31 = 89900.

Place the decimal back (3 places): 89.900.

Therefore The correct answer is 89.9.

Alternate Method

Given: Numbers are 2.9 and 0.031.

Formula Used: LCM of fractions = (LCM of Numerators) ÷ (HCF of Denominators)

=> Convert decimals to fractions: 2.9 = 29/10 and 0.031 = 31/1000.

=> Make denominators equal: 2.9 = 2900/1000 and 0.031 = 31/1000.

=> LCM = LCM(2900, 31) ÷ 1000

=> Since 31 is a prime number and not a factor of 2900, LCM(2900, 31) = 2900 × 31 = 89900.

=> Final LCM = 89900 ÷ 1000 = 89.9.

Therefore The correct answer is 89.9.

Additional Information

LCM of Fractions

LCM of a/b and c/d = LCM(a, c) ÷ HCF(b, d). Always simplify fractions to their lowest terms before applying this.

HCF of Fractions

HCF of a/b and c/d = HCF(a, c) ÷ LCM(b, d).

Prime Number Property

The LCM of two co-prime numbers (or two prime numbers) is always their product.

Q56. Answer: (d) 512

Shortcut Trick

Number of balls = (Radius of large sphere / Radius of small ball)^3

=> Radius of large sphere = 64 / 2 = 32 cm

=> Number of balls = (32 / 4)^3

=> Number of balls = 8^3 = 512

Therefore The correct answer is 512 balls.

Alternate Method

Given: Diameter of large sphere = 64 cm, Radius of small iron ball = 4 cm.

Formula Used: Volume of a sphere = (4/3) × π × r^3

Calculations:

=> Radius of large sphere (R) = 64 ÷ 2 = 32 cm

=> Let the number of small balls be n.

=> Volume of large sphere = n × Volume of one small ball

=> (4/3) × π × $(32)^3$ = n × (4/3) × π × $(4)^3$

=> 32 × 32 × 32 = n × 4 × 4 × 4

=> n = (32 × 32 × 32) ÷ (4 × 4 × 4)

=> n = 8 × 8 × 8 = 512

Therefore The correct answer is 512 balls.

Additional Information

Volume of Sphere

The amount of space occupied by a 3D sphere is $V = (4/3)\pi r^3$.

Surface Area of Sphere

The total outer area of a sphere is given by the formula $A = 4\pi r^2$.

Moulding Property

When one solid is converted into another, the Total Volume remains constant.

Q57. Answer: (c) Rs. 25,648

Shortcut Trick

Given: 2A = 4B = 7C

Ratio A : B : C = (1/2) : (1/4) : (1/7)

Multiply by LCM of (2, 4, 7) = 28 → Ratio A : B : C = 14 : 7 : 4

Share of A = [14 ÷ (14 + 7 + 4)] × 45,800 = (14/25) × 45,800

Share of A = 14 × 1832 = Rs. 25,648

Therefore The correct answer is Rs. 25,648.

Alternate Method

Given: Total Amount = Rs. 45,800; Relationship: 2A = 4B = 7C

Formula Used: Ratio & Proportion, Unitary Method

=> Let 2A = 4B = 7C = k

=> A = k/2, B = k/4, C = k/7

=> A : B : C = 1/2 : 1/4 : 1/7 = 14 : 7 : 4

=> Total Ratio = 14 + 7 + 4 = 25 units

=> 25 units = 45,800

=> 1 unit = 45,800 ÷ 25 = 1832

=> Share of A = 14 units = 14 × 1832

=> Share of A = Rs. 25,648

Therefore The correct answer is Rs. 25,648.

Additional Information

Inverse Ratio Concept

If aA = bB = cC, then the ratio A : B : C is given by (1/a) : (1/b) : (1/c) or (bc) : (ac) : (ab).

Unitary Method in Ratios

To find a specific share, divide the total quantity by the sum of ratio parts and multiply by the specific ratio part of the required entity.

Q58. Answer: (c) 24

Shortcut Trick

Divide the number 19964 by 76 to find the remainder.

19964 ÷ 76 => Remainder = 52.

Smallest number to be added = Divisor − Remainder.

Required number = 76 − 52 = 24.

Therefore The correct answer is 24.

Alternate Method

Given:

Number = 19964

Divisor = 76

Calculations:

=> 19964 = 76 × 262 + 52

=> Here, Remainder = 52

=> To make the number divisible by 76, we need to add a value such that the new remainder becomes 76 (or 0).

=> Smallest number to be added = 76 − 52

=> Smallest number to be added = 24

Therefore The correct answer is 24.

Additional Information

Division Algorithm

Dividend = (Divisor × Quotient) + Remainder. The remainder is always less than the divisor.

Number to be Subtracted

To find the smallest number to be subtracted so that the result is perfectly divisible, the required number is simply the Remainder itself.

Divisibility Rule of 76

A number is divisible by 76 if it is divisible by both 4 and 19, as 76 = 4 × 19.

Q59. Answer: (c) 194.5

Shortcut Trick

Total sum of 5 numbers = 655

Sum of first two = 2 × 80 = 160

Third number = 106

Sum of remaining two = 655 − (160 + 106) = 655 − 266 = 389

Average of remaining two = 389 ÷ 2 = 194.5

Therefore The correct answer is 194.5.

Alternate Method

Given:

Sum of 5 numbers = 655

Average of first two numbers = 80

Third number = 106

Formula Used:

Sum of observations = Average × Number of observations

Average = Sum of observations ÷ Number of observations

Calculations:

=> Sum of the first two numbers = 80 × 2 = 160

=> Sum of the first three numbers = 160 + 106 = 266

=> Sum of the remaining two numbers = Total Sum − Sum of the first three numbers

=> Sum of the remaining two numbers = 655 − 266 = 389

=> Average of the remaining two numbers = 389 ÷ 2

=> Average of the remaining two numbers = 194.5

Therefore The correct answer is 194.5.

Additional Information

Average Concept

The average of a set of numbers is the sum of the numbers divided by the count of those numbers. If the average of n numbers is A, their total sum is n × A.

Weighted Average

When two groups with averages A1 and A2 and sizes n1 and n2 are combined, the combined average is (n1A1 + n2A2) ÷ (n1 + n2).

Net Deviation Method

In any set of numbers, the sum of deviations of all numbers from their actual average is always zero.

Q60. Answer: (d) Rs. 864

Shortcut Trick

Net discount % = a + b − (a × b ÷ 100) = 20 + 10 − (20 × 10 ÷ 100) = 28%.

Selling Price (SP) = Marked Price (MP) × (100 − Net Discount %) ÷ 100.

SP = 1200 × (100 − 28) ÷ 100 = 1200 × 72 ÷ 100 = 12 × 72 = 864.

Therefore The correct answer is Rs. 864.

Alternate Method

Given: Marked Price (MP) = Rs. 1,200, First Discount (d1) = 20%, Second Discount (d2) = 10%.

Formulas: SP = MP × (100 − d1)% × (100 − d2)%

=> Price after first discount = 1200 − (20% of 1200) = 1200 − 240 = Rs. 960.

=> Price after second discount = 960 − (10% of 960) = 960 − 96 = Rs. 864.

=> Final Selling Price (SP) = Rs. 864.

Therefore The correct answer is Rs. 864.

Additional Information

Successive Discounts

When two or more discounts are applied one after another, they are called successive discounts. The total discount is not the simple sum of the percentages.

Marked Price and Discount

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

Q61. Answer: (c) 65/4

Shortcut Trick

Assume Total Work = LCM of (26, 13, 10) = 130 units.

Efficiency of Kiran = 130 ÷ 26 = 5 units/day.

Efficiency of (Kiran + Garima) = 130 ÷ 13 = 10 units/day.

Efficiency of (Kiran + Garima + Mehak) = 130 ÷ 10 = 13 units/day.

Efficiency of Mehak = (K+G+M) − (K+G) = 13 − 10 = 3 units/day.

Time for (Kiran + Mehak) = 130 ÷ (5 + 3) = 130 ÷ 8 = 65/4 days.

Therefore The correct answer is 65/4 days.

Alternate Method

Given: Time taken by Kiran = 26 days, Kiran and Garima = 13 days, Kiran, Garima and Mehak = 10 days.

Formula Used: Efficiency = Total Work ÷ Time taken

Person	Days	Total Work	Efficiency
Kiran	26	130	5
Kiran + Garima	13	10	
Kiran + Garima + Mehak	10	13	

=> Efficiency of Kiran = 5

=> Efficiency of Garima = (K + G) − K = 10 − 5 = 5

=> Efficiency of Mehak = (K + G + M) − (K + G) = 13 − 10 = 3

=> Combined efficiency of Kiran and Mehak = 5 + 3 = 8 units/day

=> Time taken by Kiran and Mehak = 130 ÷ 8 = 65/4 days

Therefore The correct answer is 65/4 days.

Additional Information

Work and Efficiency

Efficiency is inversely proportional to the time taken to complete the work. If A can do work in 'x' days, his efficiency is 1/x.

Pipes and Cisterns

Similar to time and work, but accounts for negative work (leaks). Inflow pipe efficiency is positive, outflow pipe is negative.

Combined Work Formula

If two people A and B work together, their combined efficiency is (1/A + 1/B), and time taken is (A × B) ÷ (A + B).

Q62. Answer: (c) 200 : 387

Given:

43% of first number equals two-ninths of second number

Formula Used:

Percentage = Value ÷ 100

Ratio = Comparison of two quantities in same units

Calculation:

=> Let first number = A

=> Let second number = B

=> 43% of A = (2 ÷ 9) of B

=> (43 ÷ 100) × A = (2 ÷ 9) × B

=> A ÷ B = (2 ÷ 9) ÷ (43 ÷ 100)

=> A ÷ B = (2 × 100) ÷ (9 × 43)

=> A ÷ B = 200 ÷ 387

=> A : B = 200 : 387

Therefore The correct answer is 200 : 387.

Q63. Answer: (b) iii

Shortcut Trick

A rhombus is defined as a parallelogram with all four sides equal. Since it satisfies the property of having two pairs of parallel sides, it is classified as a special type of parallelogram. Therefore, statement (iii) is the only true statement.

Therefore The correct answer is iii.

Alternate Method

Given: Four statements regarding the properties of quadrilaterals.

Formula Used: Geometric definitions of Square, Rhombus, Parallelogram, and Trapezium.

=> Statement (i): Every square is a rhombus because it has four equal sides. The claim that 'not all squares are rhombuses' is mathematically incorrect.

=> Statement (ii): A trapezium is defined by having at least one pair of parallel sides. It does not require two pairs of equal opposite sides; that is a property of parallelograms.

=> Statement (iii): A rhombus has two pairs of parallel sides, which satisfies the definition of a parallelogram. Thus, it is a special type of parallelogram.

=> Statement (iv): Diagonals are equal in rectangles and squares. In a general rhombus or parallelogram, the diagonals are usually of different lengths.

Therefore The correct answer is iii.

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Q64. Answer: (a) 8,960

Shortcut Trick

When Simple Interests are equal for the same time duration, the ratio of sums is the inverse ratio of their interest rates.

Ratio of investments P1 : P2 = 1/r1 : 1/r2 = 1/12 : 1/8 = 2 : 3.

Total ratio units = 2 + 3 = 5 units.

5 units → Rs. 22,400 => 1 unit = 22,400 ÷ 5 = Rs. 4,480.

Sum at 12% (P1) = 2 units = 2 × 4,480 = Rs. 8,960.

Therefore The correct answer is Rs. 8,960.

Alternate Method

Given: Total Principal = Rs. 22,400, Rate1 = 12%, Rate2 = 8%, Time = 4 years.

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

=> Let the sum invested at 12% be P1 and at 8% be P2.

=> SI1 = (P1 × 12 × 4) ÷ 100

=> SI2 = (P2 × 8 × 4) ÷ 100

=> Given: SI1 = SI2

=> (P1 × 12 × 4) ÷ 100 = (P2 × 8 × 4) ÷ 100

=> 12P1 = 8P2

=> P1 ÷ P2 = 8 ÷ 12 = 2 ÷ 3

=> Sum of ratios = 2 + 3 = 5 units

=> 5 units = 22,400

=> P1 = (2 ÷ 5) × 22,400

=> P1 = 2 × 4,480 = 8,960

Therefore The correct answer is Rs. 8,960.

Additional Information

Equal Simple Interest Property

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If a sum is divided into 'n' parts such that interest on each part is equal, the ratio of principal amounts is P1:P2:...:P_n = 1/(r1t1) : 1/(r2t2) : ... : 1/(r_nt_n).

Equal Amount Property

If a sum is divided into parts such that the total amount (Principal + SI) after respective periods is equal, the ratio is P1:P2 = 1/(100+r1t1) : 1/(100+r2t2).

Simple Interest Formula

Interest is calculated only on the initial Principal amount for the entire duration: SI = (P × R × T)/100.

Q65. Answer: (a) 1,206

Shortcut Trick

Let the Cost Price (CP) be 100 units.

Marked Price (MP) = 100 + 44% of 100 = 144 units.

Selling Price (SP) = 144 × (100 − 25) ÷ 100 = 144 × 0.75 = 108 units.

Profit = 108 − 100 = 8 units. Given 8 units = Rs. 67.

List Price (MP) = (67 ÷ 8) × 144 = 67 × 18 = Rs. 1,206.

Therefore The correct answer is Rs. 1,206.

Alternate Method

Given: Markup % = 44%, Discount % = 25%, Profit = Rs. 67.

Formulas: Profit = SP − CP | SP = MP × (100 − D%) ÷ 100 | MP = CP × (100 + Markup%) ÷ 100.

=> Assume CP = x.

=> Marked Price (MP) = x + 0.44x = 1.44x.

=> Selling Price (SP) = 1.44x × (1 − 0.25) = 1.44x × 0.75 = 1.08x.

=> Profit = SP − CP = 1.08x − x = 0.08x.

=> 0.08x = 67 => x = 67 ÷ 0.08 = 837.5.

=> List Price (MP) = 1.44 × 837.5 = Rs. 1,206.

Therefore The correct answer is Rs. 1,206.

Additional Information

Effective Profit/Loss Percentage

The net result of a markup and a discount can be calculated using the formula: Net % = M − D − (M × D) ÷ 100, where M is markup % and D is discount %.

Relationship between MP and CP

MP ÷ CP = (100 + Profit%) ÷ (100 − Discount%). This is useful for finding ratios directly.

Q66. Answer: (d) 25%

Shortcut Trick

Volume of a cylinder V prop. to r^2h.

Net change in Volume = $[(1 - 0.28)^2 \times (1 + 1.41)] - 1$

Net change = $[0.72 \times 0.72 \times 2.41] - 1 = 1.249488 - 1 = 0.249488$

Percentage increase ≈ 25%.

Therefore The correct answer is 25%.

Alternate Method

Given:

Decrease in Radius (r) = 28% => Final r = 100 − 28 = 72% of Initial

Increase in Height (h) = 141% => Final h = 100 + 141 = 241% of Initial

Formula Used:

Volume of Right Circular Cylinder = $\pi r^2 h$

Calculations:

=> Let Initial Radius = 100 and Initial Height = 100

=> Initial Volume (V1) = $\pi \times (100)^2 \times 100 = 1{,}000{,}000\pi$

=> New Radius = 72 and New Height = 241

=> New Volume (V2) = $\pi \times (72)^2 \times 241$

=> V2 = $\pi \times 5184 \times 241 = 1{,}249{,}344\pi$

=> Percentage Increase = [(V2 − V1) ÷ V1] × 100

=> Percentage Increase = [(1,249,344π − 1,000,000π) ÷ 1,000,000π] × 100
=> Percentage Increase = [249,344 ÷ 1,000,000] × 100 = 24.9344%
=> Closest integer value = 25%
Therefore The correct answer is 25%.
Additional Information
Successive Percentage Change
For r^2, use formula x + y + (xy/100) twice or use the multiplier method for easier calculation when percentages are large.
Surface Area Change
Curved Surface Area (CSA) = 2πrh. Change in CSA depends on only one power of r and one power of h.
Cylinder Properties
Total Surface Area (TSA) = 2πr(h + r). Changes in TSA involve additive terms and do not follow simple product rules.

Q67. Answer: (d) 15.75

Shortcut Trick
Value 1 = 65% of 75 = 0.65 × 75 = 48.75
Value 2 = 3/5 of 55 = 3 × 11 = 33
Difference = 48.75 − 33 = 15.75
Therefore The correct answer is 15.75.
Alternate Method
Given:
First expression = 65% of 75
Second expression = 3/5 of 55
Calculations:
=> First value = (65/100) × 75
=> First value = 0.65 × 75 = 48.75
=> Second value = (3/5) × 55
=> Second value = 3 × 11 = 33
=> Difference = 48.75 − 33
=> Difference = 15.75
Therefore The correct answer is 15.75.
Additional Information
Percentage to Fraction Conversion
To convert x% to a fraction, divide x by 100. Example: 65% = 65/100 = 13/20.
Fraction of a Number
The word 'of' in mathematics represents multiplication. (a/b) of N = (a/b) × N.
Decimal Multiplication Trick
Multiply the numbers as whole numbers first, then place the decimal point based on the total decimal places in the factors.

Q68. Answer: (d) 9

Shortcut Trick
Product of HCF and LCM = Product of the two numbers.
3 × 396 = 132 × Other Number
Other Number = (3 × 396) ÷ 132
Other Number = 3 × 3 = 9
Therefore The correct answer is 9.
Alternate Method
Given:
HCF = 3
LCM = 396
First Number (n1) = 132
Formula Used:
HCF × LCM = n1 × n2

Calculations:

=> 3 × 396 = 132 × n2

=> 1188 = 132 × n2

=> n2 = 1188 ÷ 132

=> n2 = 9

Therefore The correct answer is 9.

Additional Information

HCF (Highest Common Factor)

The greatest number which divides each of the two or more given numbers exactly.

LCM (Least Common Multiple)

The smallest number which is exactly divisible by each of the given numbers.

HCF of Fractions

HCF of Numerators ÷ LCM of Denominators.

Co-prime Numbers

Two numbers are co-prime if their HCF is 1.

Q69. Answer: (a) 100/751% loss

Shortcut Trick

Total Cost Price (CP) = Buying Price + Overhead Expenses = 743 + 8 = 751.

Selling Price (SP) = 750.

Since CP > SP, there is a Loss of 751 − 750 = 1.

Loss% = (Loss ÷ CP) × 100 = (1 ÷ 751) × 100 = 100/751%.

Therefore The correct answer is 100/751% loss.

Alternate Method

Given: Purchase Price = 743, Decoration Cost = 8, SP = 750.

Formulas: Total CP = Purchase Price + Overhead | Loss = CP − SP | Loss% = (Loss ÷ CP) × 100

=> Total CP = 743 + 8 = 751

=> SP = 750

=> Loss = 751 − 750 = 1

=> Loss Percentage = (1 ÷ 751) × 100 = 100/751%

Therefore The correct answer is 100/751% loss.

Additional Information

Effective Cost Price

Any additional expenses like transportation, repairs, or decoration incurred after purchasing an article are added to the purchase price to calculate the Effective Cost Price.

Profit and Loss Condition

If SP > CP, it is a Profit. If CP > SP, it is a Loss. Percentages are always calculated on the Cost Price (CP) unless stated otherwise.

Q70. Answer: (d) 5

Shortcut Trick

Check the unit digit of the number 242425.

According to the divisibility rule of 5, if a number ends in 0 or 5, it is divisible by 5.

Since the unit digit is 5, the number is divisible by 5.

Therefore The correct answer is 5.

Alternate Method

Given: Number = 242425

=> Divisibility by 6: Number must be even (divisible by 2) and sum of digits divisible by 3. 242425 is odd, so not 6.

=> Divisibility by 9: Sum of digits = 2+4+2+4+2+5 = 19. 19 is not divisible by 9.

=> Divisibility by 5: Unit digit is 5.

=> 242425 ÷ 5 = 48485 (Rem = 0).

Therefore The correct answer is 5.

Additional Information

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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 respectively.

Divisibility by 13

Multiply the last digit by 4 and add it to the remaining number. Repeat until a small number is obtained to check for divisibility by 13.

Divisibility by 10

A number is divisible by 10 only if its unit digit is 0.

Q71. Answer: (b) Only conclusion (I) follows.

The least possible Venn diagram is:

Conclusions (I): Some notes are keys. - True (Some notes are books. All books are keys.Some notes are keys is True)

Conclusions (II): All keys are books.- False (All books are keys.All keys are books.is may be possible but not definite. Hence, it is false)

Only conclusion (I) follows.

Hence, the correct answer is "Option "

Q72. Answer: (c) GZS 55

The logic followed here is:

Hence, the correct answer is "Option 3"

Q73. Answer: (c) 10

Given number 8912346

Ascending order from left to right.

Sum of the digits that are second from the left and second from the right in the new number = 8 + 2 = 10.

Q74. Answer: (a) 4

Given Number - 4376295

2 is added to each even digit and 1 is subtracted from each odd digit in the number.

Hence, the correct answer is "Option 1"

Q75. Answer: (b) 401

The logic follows here,

Hence, the correct answer is "Option 2"

Q76. Answer: (b) HJM

The logic followed here is:

Hence, the correct answer is "Option 2"

Q77. Answer: (d) L

- A, B, C, D, J, K and L are sitting around a circular table, facing the centre of the table.
- Only one person sits between A and L when counted from the right of A.
- Only one person sits between L and J.
- Only one person sits between A and D.
- Only two people sit between K and J.
- Only one person sits between C and D

The Final Arrangement is,

Hence, the correct answer is "Option 4"

Q78. Answer: (b) 5

'POUR' is coded as '4527' and 'UNIT' is coded as '1356'.

'POUR' - '4527'

'UNIT' - '1356'

The Code for U is 5.

Hence, the correct answer is "Option 2"

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Q79. Answer: (c) 2

Seven boxes A, B, C, D, E, F and G are kept one over the other but not necessarily in the same order.

• Only three boxes are kept above E.

• Only one box is kept between G and E.

• Only three boxes are kept between G and C.

• C is kept at some place above E.

• B is kept immediately below C.

• D is kept at one of the places above F.

• A is not kept immediately above or below G.

The Final Arrangement is,

A
C
B
E
D
G
F

Hence, the correct answer is "Option 3"

Q80. Answer: (d) Saras

Paras, Mani, Kajal, Kunj, Vani and Saras are sitting around a circle, facing the centre.

• Saras sits third to the left of Vani.

• Vani sits second to the right of Paras.

• Kunj sits second to the left of Kajal.

The Final Arrangement is,

Hence, the correct answer is "Option 4"

Q81. Answer: (a) 7 km to the east

Bismil starts from Point A and drives 14 km towards South.

• He then takes a left turn, drives 19 km, turns left and drives 16 km.

• He then takes a left turn and drives 26 km.

• He takes a final left turn, drives 2 km and stops at Point P.

The Final Diagram,

Hence, the correct answer is "Option 1"

Q82. Answer: (c) 3

'COLD' is coded as '2357' and 'LEAN' is coded as '4136'

'COLD' -'2357'

'LEAN' - '4136'

The Code for L is 3.

Hence, the correct answer is "Option 3"

Q83. Answer: (d) Only conclusion (I) follows.

The least possible Venn diagram is:

Conclusions:

(I): All oranges are grapes. - True (All oranges are bananas.All bananas are grapes.All oranges are grapes is a True)

(II): All grapes are bananas -False (All oranges are bananas.All bananas are grapes.All grapes are bananas is a True)

Only conclusion (I) follows.

Hence, the correct answer is "Option 4"

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Q84. Answer: (a) 24

Given number 697312458,

1 is added to each even digit and 1 is subtracted from each odd digit in the number

Hence, the correct answer is "Option 1"

Q85. Answer: (c) 21^(st)

Total students = 49

Anish is 17th from the right.

"Position from left"= 49 - 17 + 1 = 33

So, Anish is 33rd from the left.

"Raghav's position"= 33 - 12 = 21

Raghav is 21st from the left end.

Hence, the correct answer is "Option 3"

Q86. Answer: (c) 45

The logic followshere,

Hence, the correct answer is "Option 3"

Q87. Answer: (a) 31

Namit is:

13th from the bottom

19th from the top

The total number of people = Position of the person from Top + Position of the person from Bottom - 1.

Total = 13 + 19 − 1 =31

Hence, the correct answer is "Option 1"

Q88. Answer: (c) Three

Given number 76391452

2 is added to each even digit and 1 is subtracted from each odd digit in the number

8 ,6 and 4.

Hence, the correct answer is "Option 3"

Q89. Answer: (d) 13, 76

Logic : Second number = (First number × 6) − 2

Similarly,

Hence, the correct answer is "Option 4"

Q90. Answer: (b) HC – QR

The logic followed here is:

Hence, the correct answer is "Option 2"

Q91. Answer: (a) Mother's brother

By using the symbols in the table given below, we can draw the following family tree:

As per the given information,

Hence, the correct answer is "Option 1"

Q92. Answer: (a) −31

The logic follows here,

Hence, the correct answer is "Option 1"

Q93. Answer: (d) 7

Given (Left) 452 561 514 232 294 (Right)

first digit of the highest number - 561

third digit of the lowest number - 232

5 + 2 = 7.

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Hence, the correct answer is "Option 4"

Q94. Answer: (d) 37 km towards the north

• Anil starts from Point Y and drives 12 km towards the south.
• He then takes a right turn and drives 36 km, then turns left and drives 33 km.
• He then takes a left turn and drives 17 km.
• He takes a left turn and drives 21 km.
• He then turns right and drives 19 km, then turns right and drives 13 km to stop at Point Z

The Final Diagram,

Hence, the correct answer is "Option 4"

Q95. Answer: (c) PU-IM

The logic followed here is:

Hence, the correct answer is "Option 3"

Q96. Answer: (b) PFFH

The logic followed here is:

Hence, the correct answer is "Option 2"

Q97. Answer: (b) COIL - OLIC - LIOC

The logic follows here,

Similarly,

Hence, the correct answer is "Option 2"

Q98. Answer: (d) TTE : XRB

The logic follows here,

Similarly,

Hence, the correct answer is "Option 4"

Q99. Answer: (a) 5

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

Required Conditions: All the symbols are dropped

(Left) 2 8 4 5 9 6 1 3 7 (Right)

Hence, the correct answer is "Option 1"

Q100. Answer: (d) OD - KY

The logic follows here,

Hence, the correct answer is "Option 4"

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