RRB NTPC (UG) CBT-I Official Paper (Held On: 08 Aug, 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. Under the Legal Services Authorities Act, 1987, Lok Adalats have no jurisdiction to settle which of the following cases?

(a) Civil disputes pending in court
(b) Divorce and non-compoundable criminal cases
(c) Motor accident claims
(d) Compoundable criminal offences

Q2. Which of the following Indian states has all three types of physical divisions – plateau, plains, and coastal plains?

(a) Madhya Pradesh
(b) Tamil Nadu
(c) Punjab
(d) Uttar Pradesh

Q3. Womesh Chandra Bonnerjee represented Calcutta University in the Bengal Legislative Council during _____.

(a) 1889 - 1890
(b) 1899 - 1900
(c) 1886 - 1887
(d) 1894 - 1895

Q4. Which geographical feature separates India from Sri Lanka?

(a) Strait of Hormuz
(b) Gulf of Kutch
(c) Palk Strait and Gulf of Mannar
(d) Gulf of Aden

Q5. Recipient of President's Medal For Distinguished Service (PSM) on the occasion of Republic Day 2025, Shri Deepak Kumar Kedia belongs to which of the following organisations?

(a) Central Industrial Security Force (CISF)
(b) National Security Guard (NSG)
(c) Central Reserve Police Force (CRPF)
(d) Indo-Tibetan Border Police (ITBP)

Q6. According to the exercise brief published by PIB, from 10–23 March 2025, Exercise Khanjar-XII, the Joint Special Forces Drill between India and Kyrgyzstan focused primarily on:

(a) amphibious warfare
(b) counter-terrorism
(c) air defense operations
(d) naval fleet manoeuvres

Q7. Which of the following is classified as micronutrients?

(a) Fats
(b) Vitamins
(c) Proteins
(d) Carbohydrates

Q8. The initial form of Odissi dance was performed by women serving in temples. What was their traditional designation?

(a) Devadasis
(b) Maibis
(c) Maharis
(d) Maharani

Q9. Who, in 1816, modified Newton's formula for the speed of sound to take into account adiabatic compression in air?

(a) Lord Rayleigh
(b) Galileo Galilei
(c) Pierre-Simon Laplace
(d) Hermann von Helmholtz

Q10. What was the name of the Indian contender at the 72nd edition of the Miss World, 2025, pageant, held in Telangana?

(a) Tanya Sharma
(b) Nandini Gupta
(c) Rhea Singha
(d) Nikita Porwal

Q11. Which of the following Acts marked the beginning of British parliamentary control over the East India Company?

(a) Pitt's India Act of 1784
(b) Regulating Act of 1773
(c) Government of India Act, 1858
(d) Charter Act of 1813

Q12. Which of the following is a preventive measure for nuclear disasters?

(a) Constructing nuclear plants near residential areas
(b) Comprehensive monitoring and regular testing to detect equipment or operator failures
(c) Ignoring minor radiation leaks to avoid panic
(d) Disposing radioactive waste without treatment

Q13. What significant change did the Securities and Exchange Board of India (SEBI) implement in 2025 regarding derivatives trading?

(a) Lifting all trading regulations to enhance India's appeal to investors
(b) Introduction of limits on open positions in index options to reduce trading risks
(c) Eliminating the derivatives market entirely
(d) Allowing unrestricted foreign investment in derivatives

Q14. What is the total worth of the Urban Challenge Fund (UCF) announced in the Union Budget 2025–26 to encourage innovative urban development?

(a) Rs. 5 lakh crore
(b) Rs. 50,000 crore
(c) Rs. 1 lakh crore
(d) Rs. 2 lakh crore

Q15. The Chagos Archipelago, recently in the news, is a disputed territory between which two countries?

(a) France and Mauritius
(b) United States and United Kingdom
(c) United Kingdom and Mauritius

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(d) United Kingdom and India

Q16. The Right to Public Services legislation was first introduced by which Indian state?

(a) Madhya Pradesh
(b) Karnataka
(c) Maharashtra
(d) Bihar

Q17. What was the Supreme Court's decision regarding the Kamla Nehru Memorial Trust's land allotment in Uttar Pradesh?

(a) Cancelled the land allotment due to lack of public benefit assessment
(b) Directed the state to provide alternative land
(c) Ordered compensation to the Trust
(d) Upheld the land allotment due to considerable public benefit assessment

Q18. The Golden Temple, which is situated in Amritsar, Punjab, is alternatively known as _____.

(a) Akal Takht
(b) Anandpur Sahib
(c) Sri Harmandir Sahib
(d) Gurudwara Hemkunt Sahib

Q19. The Lion Capital located at Sarnath, which is adopted as the national emblem of the Republic of India, was erected by which of the following Mauryan kings?

(a) Ashoka
(b) Bindusara
(c) Devavarman Maurya
(d) Samprati Maurya

Q20. Which medical term describes an eating disorder in which energy expenditure is restricted below requirements, leading to significant weight loss?

(a) Bulimia Nervosa
(b) Diabulimia Nervosa
(c) Anorexia Nervosa
(d) Orthorexia Nervosa

Q21. Which of the following statements about the Peninsular Plateau of India is NOT correct?

(a) The Western Ghats are higher than the Eastern Ghats.
(b) The Deccan Plateau is a triangular landmass that lies to the south of the river Narmada.
(c) The Peninsular plateau consists of three broad divisions, namely, the Northern Highlands, Central Highlands and the Deccan Plateau.
(d) The Peninsular plateau is a tableland composed of the old crystalline, igneous and metamorphic rocks

Q22. Rural infrastructure development is crucial to improve connectivity and access to markets and services. Which scheme focuses on providing all-weather road connectivity to unconnected habitations?

(a) Saansad Adarsh Gram Yojana
(b) Deendayal Antyodaya Yojana - National Rural Livelihoods Mission
(c) Pradhan Mantri Awas Yojana
(d) Pradhan Mantri Gram Sadak Yojana

Q23. The 'Special Food Grain Production Programme (SFPP) on Pulses' was implemented during the year _____.

(a) 1968-69
(b) 1972-73
(c) 1982-83
(d) 1988-89

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Q24. Who initiated the Sampoorna Grameen Rozgar Yojana (SGRY)?

(a) Central Government
(b) Private Sector
(c) Panchayati Raj Institutions
(d) State Governments

Q25. According to IQAir's World Air Quality Report released in March 2025, which place in Meghalaya is the most polluted globally?

(a) Tura
(b) Jowai
(c) Shilllong
(d) Byrnihat

Q26. Which of the following Directive Principles of State Policy is provided under Article 43A of the Indian Constitution?

(a) Right to education
(b) Promotion of international peace
(c) Living wage for workers
(d) Participation of workers in industrial management

Q27. Which Indian athlete won gold in the women's high jump at the 2025 Asian Athletics Championships?

(a) Sahana Kumari
(b) Nandini Agasara
(c) Pooja Singh
(d) Swapna Barman

Q28. Which of the following is considered a poor file management practice on a computer system?

(a) Giving files meaningful and descriptive names
(b) Saving temporary files in unrelated and scattered folders
(c) Creating separate folders for documents, images and videos
(d) Using nested folders to organise large sets of data

Q29. Identify whether the given statements are correct or incorrect with respect to INDRA 2025.

Statement 1: It is a bilateral naval exercise between India and South Africa.

Statement 2: The 14th edition of this exercise included a wide range of activities and structured drills designed to enhance interoperability towards countering common maritime threats.

(a) Both Statements 1 and 2 are incorrect
(b) Both Statements 1 and 2 are correct
(c) Statement 1 is correct and 2 is incorrect
(d) Statement 2 is correct and 1 is incorrect

Q30. What does the abbreviation 'SRAM' stand for in computer memory?

(a) Synchronous Read Access Memory
(b) Standard Random Access Memory
(c) Static Read Access Memory
(d) Static Random Access Memory

Q31. Which agency developed the Vikram 3201 and Kalpana 3201 microprocessors for space applications in 2025?

(a) ISRO
(b) BARC
(c) BEL
(d) DRDO

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Q32. Article 19 of the Indian Constitution guarantees six freedoms. Which of the following is NOT one of them?

(a) Freedom to form associations or unions
(b) Freedom from arrest
(c) Freedom of speech and expression
(d) Freedom to move freely throughout the territory of India

Q33. The first systematisation of the Jain canonical literature took place at ____.

(a) Vallabhi
(b) Pataliputra
(c) Mathura
(d) Lumbini

Q34. Which Article provides for the formation of Ward Committees in Municipal areas?

(a) Article 243R
(b) Article 243Z
(c) Article 243T
(d) Article 243S

Q35. In 2025, the Indian government approved the setup of which numbered launch pad at Sriharikota?

(a) Launch Pad Four
(b) Launch Pad Three
(c) Launch Pad Zero
(d) Launch Pad One

Q36. What is the rank of the services sector in terms of the top recipient of FDI equity in FY 2024-25, as per the data of Ministry of Commerce and Industry?

(a) First
(b) Third
(c) Second
(d) Fourth

Q37. Where was Gandhi's method of Satyagraha first evolved and later fully developed as a freedom struggle tool in India?

(a) Kheda
(b) South Africa
(c) Champaran
(d) Bombay

Q38. Who among the following became the first Indian chess player to qualify for the Esports World Cup (EWC) 2025 through the second leg of the Champions Chess Tour?

(a) Arjun Erigaisi
(b) Praggnanandhaa Rameshbabu
(c) Bhubaneswar Kumar
(d) Pentala Harikrishna

Q39. Which Indian State contributes the most to commercial floriculture cultivation, accounting for more than 20% of the country's total production in FY 2024?

(a) West Bengal
(b) Tamil Nadu
(c) Chhattisgarh
(d) Gujarat

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Q40. As of March 14, 2024, which of the following is the world's highest railway bridge?

(a) Jubilee Bridge
(b) Chenab Bridge
(c) Vikramshila Setu
(d) Nehru Setu Bridge

MATHEMATICS

Q41. An item is marked for Rs. 18,000. A shopkeeper gives two successive discounts of 10% and 5%. What is its selling price?

(a) Rs. 14,390
(b) Rs. 17,390
(c) Rs. 16,390
(d) Rs. 15,390

Q42. The value of √256+√0.0256-√4.41 is _____.

(a) 14.06
(b) 13.37
(c) 13.18
(d) 7.4

Q43. Which of the following numbers is divisible by 14?

(a) 6794266
(b) 6436639
(c) 7048048
(d) 7132968

Q44. Salman and Vivek together invested Rs. 45,200 in a business. At the end of the year, out of a total profit of Rs. 16,000, Vivek's share was Rs. 6,400. What was the difference between their investments?

(a) Rs. 10,752
(b) Rs. 7,053
(c) Rs. 9,040
(d) Rs. 9,093

Q45. Sapna invested Rs. 20,400 on simple interest, partly at the rate of 14% per annum and partly at the rate of 11% per annum. If she earns equal interests from the two investments after 9 years, then find the sum invested at the rate of 14% per annum (in Rs.).

(a) 8,976
(b) 8,975
(c) 8,979
(d) 8,977

Q46. Find the value of: 26^(−19) ÷ 26^(18)× 26^3

(a) 26^(-35)
(b) 26^(-40)
(c) 26^(-34)
(d) 26^(-45)

Q47. Find the surface area of a sphere whose diameter is equal to 14 cm.

(a) 1104 π cm^2
(b) 34 π cm2
(c) 1102 π cm2
(d) 196 π cm2

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Q48. By how much is 65% of 75 greater than 2/5 of 55?

(a) 23.75
(b) 26.75
(c) 20.75
(d) 24.75

Q49. In triangle ABC, BD ? AC at D and angle DBC = 25°. E is a point on BC such that angle CAE = 80°. What is the measure of angle AEB?

(a) 140°
(b) 139°
(c) 146°
(d) 145°

Q50. The product of two consecutive positive natural numbers is 812. The greater of the two numbers is:

(a) 29
(b) 42
(c) 27
(d) 24

Q51. 93 light bulbs were purchased for Rs. 93, and 19 light bulbs broke in transit. The trader sold the remaining light bulbs at Rs. 1.40 each. Find his profit.

(a) Rs. 10.30
(b) Rs. 10.60
(c) Rs. 10.10
(d) Rs. 10.20

Q52. The HCF and the LCM of two numbers are 6 and 264, respectively. If one of the numbers is 66, find the other one.

(a) 105
(b) 115
(c) 35
(d) 24

Q53. The simple interest on a certain sum for 84/7 years at the rate of 6.8% per annum is Rs. 7,344. What will be the amount payable on the same sum at the rate of 9.7% per annum simple interest in 62/3 years?

(a) Rs. 20,745
(b) Rs. 20,761
(c) Rs. 20,748
(d) Rs. 20,765

Q54. The value of 5/2+(1/(1+3/8))-3/5 is

(a) 32/215
(b) 289/110
(c) 21/214
(d) 13/219

Q55. A bus travelling at 48 km/hr completes a journey in 9 hours. What should be its speed to cover the same distance in 12 hours?

(a) 29 km/hr
(b) 26 km/hr
(c) 36 km/hr
(d) 37 km/hr

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Q56. If 2 times Mary's present age is 27 years more than 5 times Dia's present age, and 7 times Dia's present age is 9 years less than Mary's present age, then what is the difference (in years) between the ages of Mary and Dia?

(a) 11
(b) 15
(c) 13
(d) 17

Q57. Zeeshan travels 294 km at 42 km/hr, the next 210 km at 30 km/hr and the next 330 km at 66 km/hr. What is his average speed (in km/hr) for the whole journey? (Round off your answer to two decimal places)

(a) 36.24
(b) 43.89
(c) 48.89
(d) 40.17

Q58. Priya, Deepak, and Simran invest Rs. 1,370, Rs. 1,500, and Rs. 1,230, respectively, to start a business. If the profit at the end of the year is Rs. 1,010, then what is the share of Simran in the profit?

(a) Rs. 304
(b) Rs. 300
(c) Rs. 306
(d) Rs. 303

Q59. A shopkeeper lists the price of a fan at 25% above its cost price and offers a 16% discount on its list price. If he earns a profit of Rs. 140, then what is the list price (in Rs.) of the fan?

(a) 3500
(b) 3257
(c) 3702
(d) 3345

Q60. An item marked for Rs. 39,250 is sold at Rs. 32,499 after allowing two successive discounts of x% and 10%. Find the value of x.

(a) 9
(b) 10
(c) 12
(d) 8

Q61. The population of a district is 368000, out of which 220000 are males. 62% of the population is literate. If 62% males are literate, then what percentage of females are literate?

(a) 63%
(b) 59%
(c) 60%
(d) 62%

Q62. If 20% of first number is equal to four-fifths of second number, what is the ratio of first number to the second number?

(a) 1 : 6
(b) 4 : 1
(c) 6 : 2
(d) 7 : 4

Q63. The curved surface area of a right circular cylinder is 5280 cm^2 and its base radius is 21 cm. Find the volume (in cm^3) of the cylinder. (Take $\pi = 22/7$)

(a) 45,550
(b) 55,440
(c) 50,440
(d) 65,660

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Q64. Find the value of $(1-\sec^2\theta)/(\sin^2\theta)\times\cos^2\theta$

(a) $\tan\theta$
(b) $\tan^2\theta$
(c) -1
(d) 1

Q65. Pipe A can fill a tank in 16 hours, pipe B can fill the same tank in 28 hours and pipe C can fill the same tank in 8 hours. The time taken by them to fill the same tank if they operate together is::

(a) 412/25 hours
(b) 212/25 hours
(c) 812/25 hours
(d) 1112/25 hours

Q66. The average of first 155 even numbers is

(a) 156
(b) 155.5
(c) 157
(d) 156.5

Q67. Find the value of x satisfying:

$2(3x^2 - 6) - 3(2x^2 + 8x - 5) = 14$

(a) -19/24
(b) -13/24
(c) -17/24
(d) -11/24

Q68. 6 men can complete a piece of work in 9 days, while 6 women can do it in 6 days. In how many days can 2 women and 3 men complete this work?

(a) 10 days
(b) 11 days
(c) 12 days
(d) 9 days

Q69. The number of prime numbers lying between 430 and 438, both included, is:

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

Q70. The marks scored by 10 students are given below.

13, 20, 15, 13, 19, 12, 12, 11, 13, 10

The mode of the given data is:

(a) 13
(b) 15
(c) 19
(d) 20

GENERAL INTELLIGENCE AND REASONING

Q71. 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.)

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108, 54

78, 39

(a) 12, 24
(b) 65, 13
(c) 96, 48
(d) 54, 18

Q72. What will come in the place of the question mark (?) in the following equation, if '÷' and '−' are interchanged and '×' and '+' are interchanged?

15 + 7 ÷ 7 × 48 − 2 + 23 × 4 = ?

(a) 612
(b) 716
(c) 559
(d) 654

Q73. Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group.

Which letter-cluster DOES NOT belong to that group? (Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

(a) NGK
(b) TMQ
(c) QJN
(d) IBE

Q74. Read the given statement(s) and conclusions carefully. Assuming that the information given in the statement(s) is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statement(s).

Statements:

Some guns are roses.

All roses are bats.

Conclusions:

(I) Some guns are bats.

(II) All bats are roses.

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

Q75. In a certain code language, 'GIRL' is coded as '5317' and 'INKS' is coded as '2146'. What is the code for 'I' in the given code language?

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

Q76. Each of the digits in the number 2436857 is arranged in ascending order from left to right. What will be the sum of the digits which are third from the left and second from the right in the new number thus formed?

(a) 12
(b) 9
(c) 10
(d) 11

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Q77. What should come in place of the question mark (?) in the given series based on the English alphabetical order?

GBD IDF KFH MHJ ?

(a) PJS
(b) OJL
(c) PQS
(d) OQK

Q78. 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.

MINK - IKNM - KNIM

PLOT - LTOP - TOLP

(a) TOES - OTES - SOET
(b) WAIT - AWIT - TAIW
(c) READ - RAED - DAER
(d) CORD - ODRC - DROC

Q79. What should come in place of the question mark (?) in the given series?

18 58 47 145 134 ?

(a) 426
(b) 406
(c) 460
(d) 408

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

(Left) ? 7 3 ? 2 5 3 ^ # + * @ 2 7 # & 5 2 * # 2 (Right)

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

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

Q81. What should come in place of the question mark (?) in the given series?

450 455 461 466 472 477 483 ?

(a) 488
(b) 490
(c) 487
(d) 489

Q82. H, I, J, K, U, V and W are sitting around a circular table facing the centre of the table. U sits fourth to the left of V. H sits fourth to the right of J. Only two people sit between V and J when counted from the left of V. K is not an immediate neighbour of H or V. I is not an immediate neighbour of K.

Who sits third to the right of W?

(a) K
(b) I
(c) U
(d) H

Q83. Nikhil ranked 18th from the top and 36th from the bottom in his class. How many students are there in his class?

(a) 55
(b) 54
(c) 53
(d) 52

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Q84. Six people, E, F, G, H, I and P, are sitting in a row, facing north. Only two people sit to the left of P. Only two people sit between P and E. Only one person sits between E and H. Only I sits between P and G. How many people sit between F and I?

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

Q85. Govind starts from Point Y and drives 12 km towards west. He then turns right and drives 37 km, takes a left turn, drives 18 km, turns left and drives 63 km. He then takes a right turn and drives 19 km. He takes a right turn, drives 35 km, turns left, drives 32 km, then turns left and drives 9 km to stop at Point Z. How far (shortest distance) and towards which direction should he drive in order to reach Point Y again? (All turns are 90° turns only unless specified.)

(a) 71 km towards west
(b) 84 km towards west
(c) 81 km towards east
(d) 77 km towards east

Q86. 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) IL - FQ
(b) WR - TW
(c) HY - DD
(d) QE - NJ

Q87. EGLU is related to IKOX in a certain way based on the English alphabetical order. In the same way, UWXG is related to YAAJ. To which of the given options is GIGP related, following the same logic?

(a) KMJS
(b) KMSJ
(c) KSDF
(d) KJSM

Q88. 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) RT-MO
(b) OQ-JM
(c) WY-RU
(d) UW-PS

Q89. Niku ranked 24th from the top and 13th from the bottom in his class. How many students are there in his class?

(a) 35
(b) 34
(c) 36
(d) 37

Q90. Which of the following letter-number clusters will replace the question mark (?) in the given series to make it logically complete?

HMI 3, JOK 6, LQM 9, NSO 12, ?

(a) MTP 20
(b) OUQ 15
(c) PUQ 15
(d) PTP 20

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Q91. GBNS is related to EYPV in a certain way based on the English alphabetical order. In the same way, CVRY is related to ASTB. To which of the following is YPVE related, following the same logic?

(a) VNXG
(b) XLYF
(c) WMXH
(d) VLWF

Q92. Each of the digits in the number 6243514 is arranged in ascending order from left to right. The position of how many digits will remain unchanged as compared to that in the original number?

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

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

679 680 684 693 709 ?

(a) 741
(b) 739
(c) 734
(d) 731

Q94. In a certain code language,

'A = B' means ‘A is the wife of B’,

'A ¥ B' means ‘A is the father of B’,

'A # B' means ‘ A is the brother of B’ and

'A % B' means ‘A is the son of B’.

How is S related to P if 'S ¥ Y # R = U % P'?

(a) Son's wife's sister
(b) Son's wife's father
(c) Son's wife's mother
(d) Son's wife's brother

Q95. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusion(s) logically follow(s) from the statements.

Statements:

All lions are tigers.

No lion is a cat.

Conclusions (I): Some cats are lions.

Conclusions (II): Some tigers are lions.

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

Q96. In a certain code language, ‘SAID’ is coded as ‘6175’ and ‘DIMS’ is coded as ‘7691’. What is the code for ‘M’ in the given code language?

(a) 9
(b) 7
(c) 6
(d) 1

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Q97. Seven boxes T, U, V, W, X, Y and D are kept one over the other but not necessarily in the same order. T is kept immediately above D. U is kept immediately above W. Only V is kept above Y. Only one box are kept between V and T. Only two boxes are kept between Y and X. How many boxes are kept between W and V?

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

Q98. What will come in the place of the question mark (?) in the following equation, if '+' and '×' are interchanged, and '−' and '÷' are interchanged?

42 − 7 × 12 + 3 ÷ 13 = ?

(a) 11
(b) 15
(c) 29
(d) 22

Q99. This question is based on the five, three-digit numbers given below.

(Left) 384 673 543 236 741 (Right)

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

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

If 2 is added to the first digit of every number, in how many numbers will the first digit be exactly divisible by the second digit?

(a) 2
(b) 0
(c) 3
(d) 1

Q100. Town J is to the west of town M. Town N is to the south of Town M. Town K is to the west of Town N. Town L is to the south of town N. What is the position of town L with respect to town K?

(a) Northeast
(b) Southwest
(c) Northwest
(d) Southeast

ANSWER KEY

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

SOLUTIONS

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Q1. Answer: (b) Divorce and non-compoundable criminal cases

The correct answer is Divorce and non-compoundable criminal cases.

Key Points

• Lok Adalats, established under the Legal Services Authorities Act, 1987, are alternative dispute resolution mechanisms in India.

• They are meant to provide a platform for amicable settlement of disputes outside the formal judicial system, ensuring faster and cost-effective justice.

• However, Lok Adalats have limited jurisdiction and cannot settle all types of cases.

• Divorce and non-compoundable criminal cases fall outside the purview of Lok Adalats. Such disputes require formal judicial intervention due to their complex and sensitive nature.

• Civil disputes pending in court, motor accident claims, and compoundable criminal offences can be taken up by Lok Adalats, provided both parties consent to the settlement.

• Non-compoundable offences, which are more serious in nature (e.g., murder, rape), are beyond the jurisdiction of Lok Adalats because they involve public interest and require formal trial and adjudication. Hence, the correct answer is Divorce and non-compoundable criminal cases.

Additional Information

• Jurisdiction of Lok Adalats:

• They have jurisdiction over civil cases, family disputes, motor accident claims, and compoundable criminal offences.

• The decision of Lok Adalats is equivalent to a decree of a civil court and is binding on the parties.

• Divorce and Non-Compoundable Criminal Cases:

• Divorce disputes generally require judicial scrutiny to ensure compliance with personal laws and to protect the rights of both parties.

• Non-compoundable criminal cases involve serious offences and cannot be settled through mutual agreement, as they impact public order and justice.

• Examples of Compoundable and Non-Compoundable Offences:

• Compoundable offences: Simple assault, theft (under a certain value), and defamation.

• Non-compoundable offences: Murder, rape, and kidnapping.

Important Points

• Advantages of Lok Adalats:

• They reduce the burden on the judiciary by resolving disputes amicably and expeditiously.

• The process is cost-effective, ensuring access to justice for economically weaker sections.

• Limitations of Lok Adalats:

• They require the consent of both parties for settlement.

• Their jurisdiction is limited to specific types of cases and excludes serious criminal offences.

Q2. Answer: (b) Tamil Nadu

The correct answer is Tamil Nadu.

Key Points

• The coastal plains in Tamil Nadu run along the Coromandel Coast and are home to several important cities like Chennai and Puducherry. These regions are flat and close to the Bay of Bengal.

• The presence of these three physical divisions makes Tamil Nadu unique in terms of geographical diversity. Hence, Tamil Nadu has all three types of physical divisions.

Additional Information

• Deccan Plateau:

• Location: Covers parts of Tamil Nadu, Karnataka, and Andhra Pradesh, extending up to central India.

• Features: Elevated terrain with black soil, rich in minerals. Supports industries and agriculture, especially cotton cultivation.

• Rivers: Fertile plains are formed by rivers like the Kaveri, Vaigai, and Palar.

• Coromandel Coast: Tamil Nadu's coastal plains lie along the Coromandel Coast, bordering the Bay of Bengal.

• Economic Importance: These regions support fishing, ports, and industries. Marina Beach in Chennai is a notable feature of the coastal plains.

Important Points

• Other States:

• Punjab: Known for its fertile plains, lacks a plateau and coastal plain.

• Tamil Nadu's unique combination of plateau, plains, and coastal plains contributes to its diverse agricultural, industrial, and economic activities.

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Q3. Answer: (d) 1894 - 1895

The correct answer is 1894 - 1895.

Key Points

• Womesh Chandra Bonnerjee was a prominent Indian barrister, politician, and social reformer who played a significant role in the country's political history.

• He was the first President of the Indian National Congress and advocated for various reforms to uplift Indian society during colonial times.

• During the years 1894 - 1895, Womesh Chandra Bonnerjee represented Calcutta University in the Bengal Legislative Council. This was a significant achievement and highlighted his contribution to education and governance.

• The Bengal Legislative Council was an important body under British rule, and representation in such councils was a mark of recognition for leaders during that era.

• Bonnerjee, through his position, worked to address educational and societal issues, fostering progress and reforms in Bengal. Hence, the correct answer is 1894 - 1895.

Additional Information

• Womesh Chandra Bonnerjee:

• Born in 1844, Womesh Chandra Bonnerjee was the first Indian to preside over the Indian National Congress in 1885.

• He was deeply involved in Indian politics and worked extensively for the rights and representation of Indians during British colonial rule.

• Bonnerjee also contributed to reforms in education, legal practices, and governance, playing an influential role in shaping modern India.

• Bengal Legislative Council:

• The Bengal Legislative Council was established during British rule as part of the administrative structure for governing the region.

• It served as an advisory body, and representation in such councils provided leaders like Bonnerjee the platform to address socio-political and educational issues.

• Calcutta University:

• Founded in 1857, Calcutta University was one of the first institutions of higher education in India and played a pivotal role in advancing education.

• Representing Calcutta University in the Bengal Legislative Council reflected Bonnerjee's commitment to education and intellectual development in Bengal.

Important Points

• Significance of Representation:

• Representation in the Bengal Legislative Council allowed Indian leaders to voice their concerns and advocate for reforms in governance and education.

• Bonnerjee’s role as the representative of Calcutta University highlighted the importance of education and intellectual contributions in shaping policies.

• Contributions to Education:

• Bonnerjee emphasized the need for accessible and quality education, which he believed was crucial for India’s progress.

• Calcutta University served as a hub for intellectuals and reformers, fostering the growth of leaders who shaped India’s future.

Q4. Answer: (c) Palk Strait and Gulf of Mannar

The correct answer is Palk Strait and Gulf of Mannar.

Key Points

• Palk Strait: The Palk Strait is a narrow stretch of water that separates the southeast coast of India (Tamil Nadu) from the northern coast of Sri Lanka. It is named after Robert Palk, a governor in colonial India.

• It connects the Bay of Bengal in the northeast with the Gulf of Mannar in the southwest, serving as a crucial geographical feature between the two countries.

• The width of the Palk Strait varies from approximately 33 to 85 km, and it is dotted with several small islands, including the Rameswaram Island and Mannar Island.

• Gulf of Mannar: The Gulf of Mannar lies to the south of the Palk Strait and is a large, shallow bay in the Indian Ocean. It is bordered by Tamil Nadu in India and the Mannar District in Sri Lanka.

• The Gulf of Mannar is rich in marine biodiversity and is home to the Gulf of Mannar Marine National Park, which protects coral reefs, seagrass beds, and a variety of marine species.

• Together, the Palk Strait and Gulf of Mannar form the natural maritime boundary between India and Sri Lanka, providing separation and connectivity at the same time.

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• Hence, Palk Strait and Gulf of Mannar are the correct geographical features that separate India from Sri Lanka.

Additional Information

• Significance of Palk Strait:

• The Palk Strait is historically significant for trade and navigation, as it provides a route between the Indian mainland and Sri Lanka.

• It is also a region of strategic importance, as the maritime boundary here has implications for the fishing community and geopolitical relations between India and Sri Lanka.

• Gulf of Mannar's Biodiversity:

• The Gulf of Mannar is known for its coral reefs, seagrass ecosystems, and marine species such as dugongs, sea turtles, and over 3,600 species of flora and fauna.

• The Gulf of Mannar Biosphere Reserve, established in 1989, is one of India's richest marine biodiversity reserves.

• The region is crucial for both ecological conservation and sustainable livelihoods for coastal communities.

• Geopolitical Importance:

• The maritime boundary between India and Sri Lanka in the Palk Strait is a contentious issue, especially concerning fishing rights and activities.

• The region has seen disputes over alleged illegal fishing practices, leading to diplomatic efforts to resolve conflicts and ensure sustainable fishing.

Important Points

• Other Geographical Features:

• Strait of Hormuz: Located in the Middle East, it connects the Persian Gulf with the Arabian Sea and is unrelated to India-Sri Lanka geography.

• Gulf of Kutch: It is located in Gujarat, India, and has no connection to Sri Lanka.

• Gulf of Aden: Situated near Yemen and Somalia, this gulf is far from India and Sri Lanka.

• Adam's Bridge (Ram Setu):

• Adam's Bridge, also known as Ram Setu, is a chain of limestone shoals between Palk Strait and Gulf of Mannar. It is believed to have historical and mythological significance.

• It is partially submerged and is a contentious issue for development and conservation efforts.

Q5. Answer: (b) National Security Guard (NSG)

The correct answer is National Security Guard (NSG).

Key Points

• Shri Deepak Kumar Kedia was awarded the President's Medal for Distinguished Service (PSM) on the occasion of Republic Day 2025. This prestigious honor is given to individuals who display exemplary service and commitment to their duties.

• Shri Deepak Kumar Kedia is associated with the National Security Guard (NSG), a premier counter-terrorism and special operations force in India.

• The National Security Guard (NSG) was established in 1984 under the National Security Guard Act, 1986. It is a federal contingency force tasked with combating terrorism and safeguarding national security.

• The NSG is highly trained and specializes in counter-terrorism, hostage rescue, bomb disposal, and anti-hijacking operations. Shri Deepak Kumar Kedia's contributions to these critical areas have been recognized with this honor.

• The PSM award highlights Shri Kedia's commitment, leadership, and exceptional service in the NSG, which plays a vital role in maintaining national security.

• Hence, the correct answer is National Security Guard (NSG).

Additional Information

• About the National Security Guard (NSG):

• The NSG was established in 1984, following the assassination of Prime Minister Indira Gandhi, to combat terrorism and protect national interests.

• The force operates under the Ministry of Home Affairs and is often referred to as the "Black Cats" due to their distinctive black uniforms.

• The NSG is a specialized force trained to handle high-risk situations such as counter-terrorism, hostage rescue, and bomb disposal operations.

• It has been involved in several high-profile operations, including the 26/11 Mumbai attacks and other counter-terrorism missions.

• President's Medal for Distinguished Service (PSM):

• The PSM is one of the highest honors awarded to individuals in uniformed services for outstanding commitment and service.

• It recognizes individuals who demonstrate exceptional leadership, dedication, and contributions to their respective organizations.

• Recipients of this award serve as role models and are recognized for their significant impact on national security and public

safety.

Important Points

• Other Security Forces Mentioned in the Options:

• Central Industrial Security Force (CISF): Established in 1969, the CISF provides security to critical infrastructure such as airports, nuclear plants, and government buildings.

• Central Reserve Police Force (CRPF): The CRPF, established in 1939, is India's largest paramilitary force, tasked with internal security, riot control, and counter-insurgency operations.

• Indo-Tibetan Border Police (ITBP): Raised in 1962, the ITBP guards India's border with China and specializes in high-altitude operations.

• Recognition of NSG Personnel:

• The NSG personnel have been recognized on several occasions for their bravery, discipline, and operational efficiency.

• The PSM awarded to Shri Deepak Kumar Kedia signifies the critical role played by the NSG in ensuring the safety and security of India.

Q6. Answer: (b) counter-terrorism

The correct answer is counter-terrorism.

Key Points

• Exercise Khanjar: It is a Joint Special Forces Military Drill conducted between India and Kyrgyzstan. This exercise aims to strengthen military cooperation and enhance interoperability between the two nations.

• Focus of Khanjar-XII: The 12th edition of Exercise Khanjar, conducted from 10–23 March 2025, focused primarily on counter-terrorism operations. This reflects the ongoing commitment of both nations to combat terrorism and enhance regional security.

• The exercise included joint training sessions on combat tactics, high-altitude operations, urban warfare, and hostage rescue missions. These are crucial elements of counter-terrorism operations.

• The participation of Special Forces units from both countries highlights the emphasis on specialized training and the role of elite forces in counter-terrorism strategies.

• The focus on counter-terrorism aligns with the global and regional security challenges faced by both nations, particularly in Central Asia, which has witnessed an increase in terror-related activities in recent years.

• Hence, the correct answer is counter-terrorism.

Additional Information

• About Exercise Khanjar:

• The exercise was first initiated in 2011 to foster defense cooperation and mutual understanding between India and Kyrgyzstan.

• It is held alternately in the two countries and focuses on tactical drills, counter-terrorism techniques, and disaster management operations.

• Counter-Terrorism Training:

• Counter-terrorism operations require specialized skills such as intelligence gathering, surveillance, hostage rescue, and neutralization of threats.

• The training emphasizes urban warfare, high-altitude operations, and the use of modern technology to combat terrorism effectively.

• India-Kyrgyzstan Defense Cooperation:

• India and Kyrgyzstan share strong defense ties, with both nations committed to ensuring regional security and stability.

• The Kyrgyzstan-India Mountain Biomedical Research Center is another example of their collaboration in the defense sector.

Important Points

• Other Options Explained:

• Amphibious Warfare: This involves operations conducted on both land and water, typically not a focus area of Exercise Khanjar.

• Air Defense Operations: These operations involve protecting airspace against hostile threats, which is not the primary objective of Exercise Khanjar.

• Naval Fleet Manoeuvres: This pertains to naval exercises and the movement of warships, which is unrelated to this land-based exercise.

• Significance of Counter-Terrorism Operations:

• Counter-terrorism is critical for maintaining regional stability and ensuring the safety of civilians against extremist threats.

• Exercises like Khanjar enhance preparedness and equip forces with the latest skills to combat evolving threats.

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Q7. Answer: (b) Vitamins

The correct answer is Vitamins.

Key Points

• Micronutrients are essential nutrients required by the body in small amounts for proper physiological functioning. These include vitamins and minerals.

• Vitamins are classified as micronutrients because they are required in minute quantities and play a vital role in various biochemical processes. For example, Vitamin A is crucial for vision, while Vitamin C supports immune functions. Hence, option 2 is correct.

• Proteins, fats, and carbohydrates are macronutrients, not micronutrients. They are required in larger quantities to provide energy, build and repair tissues, and support overall body functions. Hence, options 1, 3, and 4 are incorrect.

• Micronutrients, such as vitamins, are vital for regulating metabolism, maintaining cellular functions, and preventing diseases. Deficiency in micronutrients can lead to health issues like scurvy (Vitamin C deficiency) or rickets (Vitamin D deficiency).

• Unlike macronutrients, micronutrients do not provide energy but are indispensable for maintaining optimal health and biochemical activities. Hence, the correct answer is Vitamins.

Additional Information

• Characteristics of Micronutrients:

• Micronutrients include vitamins (e.g., Vitamin A, B-complex, Vitamin C, Vitamin D, Vitamin E, Vitamin K) and minerals (e.g., iron, zinc, magnesium, calcium).

• They are required in very small amounts, usually measured in milligrams or micrograms, but their impact on health is significant.

• Micronutrients are obtained primarily from a balanced diet, including fruits, vegetables, grains, and animal products.

• Functions of Vitamins:

• Vitamin A: Supports vision, immune health, and skin integrity.

• Vitamin B-complex: Helps in energy metabolism and supports nervous system functions.

• Vitamin C: Boosts immunity and aids in collagen synthesis.

• Vitamin D: Regulates calcium absorption and bone health.

• Vitamin K: Essential for blood clotting and bone health.

• Sources of Micronutrients:

• Vitamins: Found in fruits, vegetables, dairy products, meat, and fortified foods.

• Minerals: Found in leafy vegetables, nuts, seeds, meat, and seafood.

• A balanced diet is essential for meeting micronutrient requirements and preventing deficiencies.

Important Points

• Differences Between Micronutrients and Macronutrients:

• Micronutrients: Required in small quantities; include vitamins and minerals.

• Macronutrients: Required in larger quantities; include proteins, fats, and carbohydrates.

• Micronutrients do not provide energy but are crucial for biochemical functions, whereas macronutrients serve as energy sources.

• Health Implications:

• Deficiency in micronutrients can lead to conditions such as anemia (iron deficiency), scurvy (Vitamin C deficiency), or osteoporosis (calcium and Vitamin D deficiency).

• Excessive intake of certain micronutrients can also result in toxicity. For example, excessive Vitamin A can lead to hypervitaminosis A.

Q8. Answer: (c) Maharis

The correct answer is Maharis.

Key Points

• Maharis were the traditional female temple dancers associated with Odissi dance, a classical dance form of India originating in the state of Odisha.

• The term "Mahari" is derived from the Sanskrit words "Mahan" (great) and "Nari" (woman), signifying their revered position as sacred performers in temple rituals.

• Their primary role was to perform ritualistic dances in honor of Lord Jagannath at the Jagannath Temple in Puri and other temples in Odisha.

• Maharis were considered spiritually wed to the deity, representing a divine connection. Their dances depicted spiritual themes, often based on the Gita Govinda by Jayadeva.

• The Mahari tradition declined during the colonial period, but efforts to revive Odissi dance in the 20th century included rediscovering its roots in Mahari performances.

• Hence, the correct answer is Maharis.

Additional Information

• Odissi Dance:

• Odissi is one of the eight classical dance forms of India, known for its sensuous movements and sculpturesque poses.

• It originated in the temples of Odisha and was traditionally performed as an act of devotion to deities, especially Lord Jagannath.

• The dance incorporates tribhanga (triple bend posture) and graceful movements to narrate mythological stories.

• Role of Maharis:

• Maharis were highly skilled performers who underwent rigorous training in music, dance, and temple rituals.

• Their performances were deeply spiritual, aimed at creating a divine experience for the temple audience.

• Other Designations in Indian Culture:

• Devadasis: Female temple dancers in South India dedicated to temple deities, performing Bharatanatyam and other art forms.

• Maibis: Spiritual priestesses in Manipur associated with rituals and dances, particularly in Meitei culture.

• Maharani: A term used to denote queens or royal women in Indian history, unrelated to temple dance traditions.

Important Points

• The Gita Govinda, composed by Jayadeva in the 12th century, played a significant role in shaping the themes of Mahari performances. It emphasizes the love and devotion between Radha and Krishna.

• Efforts to revive Odissi dance in the 20th century were led by stalwarts like Kelucharan Mohapatra, who incorporated elements of the Mahari tradition into the modern classical dance form.

• While the Mahari tradition itself has faded, its legacy continues to influence the rich cultural heritage of Odisha and classical Indian dance.

Q9. Answer: (c) Pierre-Simon Laplace

The correct answer is Pierre-Simon Laplace.

Key Points

• Pierre-Simon Laplace, a renowned French mathematician and physicist, modified Newton's formula for the speed of sound in 1816.

• Laplace realized that sound waves travel through air as an adiabatic process (a process where no heat is exchanged with the surroundings).

• Newton had assumed the propagation of sound as an isothermal process (a process where temperature remains constant), but this assumption led to inaccuracies in the calculated speed of sound.

• Laplace corrected Newton's formula by introducing the adiabatic constant, which accounts for the relationship between pressure and volume during adiabatic compression in air. Hence, Laplace's correction improved the accuracy of the formula.

• The corrected formula for the speed of sound in air is expressed as $v = \sqrt{(\gamma P/\rho)}$, where γ is the adiabatic constant (specific heat ratio), P is the pressure, and ρ is the density. This correction is pivotal in acoustics and thermodynamics.

• Hence, the correct answer is Pierre-Simon Laplace.

Additional Information

• Pierre-Simon Laplace:

• Born: 1749, France – Laplace is considered one of the greatest mathematicians and physicists in history.

• His work contributed significantly to fields like astronomy, mathematics, probability, and thermodynamics.

• Laplace's correction to Newton's formula laid the foundation for a better understanding of sound propagation in gases.

• Adiabatic Process:

• An adiabatic process is one where no heat is exchanged with the surroundings. It is common in processes involving rapid changes, such as sound waves.

• γ (gamma): The adiabatic constant, also called the specific heat ratio, is the ratio of the specific heat at constant pressure (C_p) to the specific heat at constant volume (C_v).

• Applications: Understanding adiabatic processes is crucial in thermodynamics, acoustics, and the design of engines and turbines.

• Newton's Original Formula:

• Newton's formula for the speed of sound was based on the assumption that the sound propagation is isothermal (temperature remains constant).

• This led to a significant error because sound waves propagate rapidly, making the process adiabatic instead.

Important Points

• Key Contributions:

• Laplace's correction is fundamental in physics and engineering, ensuring accurate calculations of sound speed in gases.

• Adiabatic constant γ: For air, γ is approximately 1.4, and it varies for different gases.

• Applications: Laplace's formula is used in acoustics, meteorology, and the study of sound waves in various mediums.

• Other Scientists:

• Lord Rayleigh: He contributed significantly to acoustics but did not modify Newton's formula.

• Galileo Galilei: Known for his contributions to mechanics and astronomy, but not related to sound propagation.

• Hermann von Helmholtz: Worked on sound and resonance but did not modify Newton's formula.

Q10. Answer: (b) Nandini Gupta

The correct answer is Nandini Gupta.

Key Points

• Nandini Gupta represented India at the 72nd edition of the Miss World pageant held in 2025 in Telangana.

• Miss World is one of the oldest and most prestigious international beauty pageants, started in 1951. It attracts participants from across the globe and celebrates beauty, talent, intelligence, and social contribution.

• Nandini Gupta gained recognition due to her poise, intelligence, and exceptional performance during the pageant's competitive rounds, including talent showcases, interviews, and social projects. Hence, this answer is correct.

• The choice of Telangana as the venue for the Miss World 2025 pageant was significant. It highlighted India's growing influence in hosting international events and showcased the state's culture, heritage, and infrastructure.

• Nandini Gupta's participation reflects India's continued presence and success in international beauty pageants, with several Indian contestants historically winning the Miss World title, including Reita Faria (1966), Aishwarya Rai (1994), Priyanka Chopra (2000), and Manushi Chhillar (2017).

Additional Information

• About Nandini Gupta:

• Age: At the time of the Miss World 2025 pageant, Nandini Gupta was 24 years old.

• Location: Nandini hails from Kota, Rajasthan, which is well-known for its educational institutions and cultural heritage.

• Achievements: Apart from her participation in Miss World, Nandini Gupta had also won the Femina Miss India title in 2023, showcasing her talent and charisma on national and international stages.

• Role of Telangana in Hosting Miss World:

• Telangana's selection as the venue for Miss World 2025 reflects India's ability to host large-scale international events. The state is known for its rich history, cultural heritage, and modern infrastructure.

• Example: Hyderabad, the capital of Telangana, has emerged as a global hub for technology, tourism, and events, making it an ideal location for such pageants.

• Miss World Pageant Overview:

• The Miss World pageant emphasizes not only beauty but also social responsibility through its “Beauty with a Purpose” initiative, which encourages contestants to undertake social projects.

• It has been instrumental in raising awareness about various global issues like education, healthcare, and women's empowerment.

Important Points

• Notable Indian Miss World Winners:

• Reita Faria (1966): She was the first Indian and Asian to win the Miss World title.

• Aishwarya Rai (1994): Known for her beauty and intelligence, Aishwarya later became a successful actress.

• Priyanka Chopra (2000): After winning Miss World, Priyanka Chopra has established herself as a global icon in entertainment.

• Manushi Chhillar (2017): Manushi's win reinforced India's dominance in the beauty pageant sphere.

• Telangana as a Venue:

• Telangana has hosted various international events, showcasing its hospitality, infrastructure, and cultural diversity.

Q11. Answer: (b) Regulating Act of 1773

The correct answer is Regulating Act of 1773.

Key Points

• The Regulating Act of 1773 was the first law passed by the British Parliament to regulate the administration of the East India Company. It marked the beginning of British Parliamentary control over the Company's operations in India.

• It aimed to address the growing corruption and administrative inefficiency in the Company. The British government realized the need to regulate the Company's activities to ensure proper governance.

• The Act provided for the appointment of a Governor-General of Bengal, who had supervisory authority over the presidencies of Madras and Bombay. This centralization of power helped establish a unified administration in British India.

• The Act also created a Supreme Court of Judicature in Calcutta (established in 1774) to oversee legal matters and enforce the

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rule of law. This was the first time that a formal judicial system was introduced in British India.

• It mandated that Company officials, including the Governor-General, must follow the directives of the British Parliament. This ensured that the Company's policies aligned with the interests of the British government.

• The Act was a response to a growing need for accountability and oversight. It introduced a system of double government, where the Company was regulated by both its Court of Directors and the British Parliament.

• Hence, the Regulating Act of 1773 marked the beginning of British Parliamentary control over the East India Company.

Additional Information

• Pitt's India Act of 1784:

• The Pitt's India Act was passed to correct the shortcomings of the Regulating Act. It introduced a dual system of governance, where the Court of Directors managed commercial affairs, while the Board of Control oversaw political and administrative matters.

• This Act established the supremacy of the British government over the Company's operations and further centralized power in the hands of the British Parliament.

• Government of India Act, 1858:

• This Act marked the formal end of the East India Company's rule and transferred the governance of India directly to the British Crown.

• It was passed in the aftermath of the Indian Rebellion of 1857 to ensure better administration and prevent further uprisings.

• Charter Act of 1813:

• This Act ended the monopoly of the East India Company in trade with India, allowing private traders to engage in business.

• It also emphasized the promotion of education and Christian missionary activities in India.

Important Points

• Key Characteristics of the Regulating Act of 1773:

• It was the first step towards centralized administration in British India, leading to the eventual establishment of the British Raj.

• The Act laid the foundation for parliamentary oversight, making the East India Company accountable for its actions in India.

• Significance of the Act:

• The Regulating Act served as a precursor to future legislations like the Pitt's India Act, which further solidified British control over Indian administration.

• It introduced the idea of a legal framework for governance, a significant departure from the Company's earlier unregulated and arbitrary administration.

Q12. Answer: (b) Comprehensive monitoring and regular testing to detect equipment or operator failures

The correct answer is Comprehensive monitoring and regular testing to detect equipment or operator failures.

Key Points

• Comprehensive monitoring and regular testing are critical for ensuring the safety and functionality of nuclear plants. This includes:

• Regular inspection of equipment to identify wear and tear or potential failures.

• Monitoring and evaluating the performance of operators to ensure adherence to protocols.

• Implementation of advanced sensors and technologies to detect early signs of malfunction.

• Such practices help to reduce the risk of catastrophic failures by addressing issues proactively.

• Ensuring robust safety measures can minimize the release of harmful radiation in case of accidents.

• Regular testing ensures that all systems, such as cooling systems and emergency shutdown mechanisms, are fully functional.

• Global agencies like the International Atomic Energy Agency (IAEA) recommend such measures to ensure nuclear safety.

Additional Information

• Preventive measures for nuclear disasters:

• Site selection: Nuclear plants should be located away from densely populated areas to minimize the impact of potential accidents.

• Advanced designs: Use of passive safety systems in reactor designs to ensure automatic safety measures in case of emergencies.

• Training: Comprehensive training for plant operators to handle emergency situations effectively.

• Emergency preparedness: Creating and regularly practicing emergency response plans for nearby communities.

• Characteristics of incorrect options:

• Option 1: Constructing nuclear plants near residential areas increases the risk to human life in case of accidents and is not a preventive measure.

• Option 3: Ignoring minor radiation leaks can lead to long-term health hazards and environmental damage, making it an unsafe practice.

• Option 4: Disposing radioactive waste without treatment can result in severe environmental contamination and health issues.

Important Points

• Global examples of nuclear disasters:

• Chernobyl disaster (1986): A reactor explosion in Ukraine, leading to widespread radiation exposure and environmental damage.

• Fukushima disaster (2011): Caused by an earthquake and tsunami in Japan, highlighting the importance of natural disaster preparedness.

• Role of regulatory bodies: Organizations like the IAEA and national regulatory bodies ensure compliance with safety standards and promote best practices globally.

Q13. Answer: (b) Introduction of limits on open positions in index options to reduce trading risks

The correct answer is Introduction of limits on open positions in index options to reduce trading risks.

Key Points

• The Securities and Exchange Board of India (SEBI) implemented a significant change in 2025 by introducing limits on open positions in index options.

• The purpose of this regulation was to reduce trading risks and ensure that excessive speculation does not destabilize the derivatives market.

• Index options are a type of derivative used by traders to hedge against risks or speculate on the movement of market indices.

• However, large open positions in these instruments can increase systemic risks, leading to excessive volatility in the financial markets.

• This regulatory measure by SEBI aimed to strike a balance between providing liquidity in the market and maintaining financial stability.

• The introduction of position limits ensures that no single trader or group of traders can excessively influence the market, thereby protecting investors and the broader financial system.

• This regulatory move aligns with SEBI's mandate to ensure market integrity and promote the development of a well-regulated and efficient securities market.

Additional Information

• What are Index Options?

• Index options are financial derivatives that derive their value from a specific index, such as the NIFTY 50 or SENSEX.

• They allow traders to buy or sell the option to trade the index at a specific price on or before a predetermined date.

• They are widely used for hedging portfolio risks or speculating on market movements.

• Why are Position Limits Important?

• Position limits are regulatory caps on the number of contracts a trader or entity can hold in the derivatives market.

• They are essential for preventing market manipulation and ensuring fair trading practices.

• Position limits help mitigate risks associated with excessive speculation, which can lead to sharp market fluctuations.

• SEBI's Role in Market Regulation:

• The Securities and Exchange Board of India (SEBI) is the regulatory body for securities and derivatives markets in India.

• Its primary role is to protect investor interests, promote market development, and regulate the securities market.

• SEBI ensures that market operations are conducted transparently and efficiently, thereby fostering investor confidence.

• Examples of SEBI's Past Regulatory Measures:

• Introduction of circuit breakers to prevent excessive market volatility.

• Implementation of margin requirements to reduce the risk of default in derivatives trading.

• Mandating the use of Unique Client Codes for tracking trading activities.

Important Points

• Advantages of Position Limits:

• They prevent market manipulation by limiting the influence of a single trader or entity.

• Position limits enhance market stability and protect retail investors from excessive volatility.

• They contribute to the overall transparency and integrity of the financial markets.

• Global Practices:

• Other countries, such as the United States (through the Commodity Futures Trading Commission), also impose position limits on derivatives trading.

• These measures are part of international efforts to strengthen financial market regulation post the 2008 global financial crisis.

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Q14. Answer: (c) Rs. 1 lakh crore

The correct answer is Rs. 1 lakh crore.

Key Points

• The Urban Challenge Fund (UCF) was announced in the Union Budget 2025–26 to promote innovative solutions for urban development.

• The total worth of the fund is Rs. 1 lakh crore, which is aimed at addressing challenges in urban planning and infrastructure. Hence, the correct option is Rs. 1 lakh crore.

• The fund seeks to incentivize states and urban local bodies to adopt modern urban planning, improve infrastructure, and ensure sustainable development.

• This initiative aligns with the government's vision of creating smart cities and ensuring that urban areas are equipped to handle challenges such as growing populations, traffic congestion, and climate change.

• The fund also encourages the adoption of technology-driven solutions to enhance urban governance and service delivery. Hence, this fund is a significant step toward comprehensive urban development.

Additional Information

• Urban Challenge Fund (UCF):

• The UCF was introduced in the Union Budget 2025–26 to support urban transformation in India.

• It emphasizes the need for innovative urban planning, addressing issues such as unplanned urbanization, lack of infrastructure, and environmental degradation.

• The fund encourages states to adopt sustainable practices and integrate technology into urban governance.

• Features of UCF:

• A total allocation of Rs. 1 lakh crore has been provided to incentivize urban local bodies and states.

• The fund supports projects such as smart cities, waste management systems, renewable energy projects, affordable housing, and urban transport systems.

• It aims to improve urban resilience, ensuring cities are better prepared for challenges such as climate change impacts and population growth.

• Government's Vision for Urban Development:

• The UCF aligns with the government's broader vision of urban transformation, focusing on sustainable and inclusive growth.

• Projects under this fund will complement existing programs such as the Smart Cities Mission and AMRUT (Atal Mission for Rejuvenation and Urban Transformation).

• It also focuses on enhancing urban mobility through initiatives like metro rail expansion and electric vehicles for public transportation.

Important Points

• Key Objectives of UCF:

• To promote innovation in urban development and governance.

• To ensure the adoption of smart technologies for efficient urban management.

• To address challenges such as urban sprawl, lack of infrastructure, and pollution.

• Relation to Other Programs:

• The UCF complements government schemes like the Smart Cities Mission, AMRUT, and Swachh Bharat Abhiyan.

• It works alongside initiatives for affordable housing, waste management, and water supply improvement.

Q15. Answer: (c) United Kingdom and Mauritius

The correct answer is United Kingdom and Mauritius.

Key Points

• The Chagos Archipelago is a group of islands located in the Indian Ocean. It is situated around 500 kilometers south of the Maldives.

• The archipelago has been a point of geopolitical and legal dispute between the United Kingdom and Mauritius. Mauritius claims the archipelago as part of its territory, while the UK maintains control over it. Hence, the dispute exists between the United Kingdom and Mauritius.

• The UK retained control of the Chagos Archipelago after granting independence to Mauritius in 1968. It was separated from Mauritius in 1965 as part of the British Indian Ocean Territory (BIOT).

• Mauritius has consistently argued that the separation of the Chagos Archipelago was illegal under international law. It claims the territory was unlawfully taken during the process of decolonization.

• The archipelago also has strategic importance, as the United States operates a military base on Diego Garcia, the largest island in the archipelago.

• In 2019, the International Court of Justice (ICJ) issued an advisory opinion stating that the UK should end its administration of

the Chagos Archipelago and return it to Mauritius.

• Despite this advisory opinion, the UK has not relinquished control over the archipelago, arguing that it provides vital support for defense and security operations. Hence, the correct answer is United Kingdom and Mauritius.

Additional Information

• Geography of the Chagos Archipelago:

• The archipelago consists of more than 60 islands, with Diego Garcia being the largest and most significant island.

• The Chagos Archipelago lies in the Indian Ocean, strategically located between Africa and Asia, making it geopolitically important.

• International Legal Dispute:

• In 2019, the International Court of Justice (ICJ) ruled that the UK's detachment of the Chagos Archipelago from Mauritius during decolonization was illegal.

• The ICJ advisory opinion emphasized that the process of decolonization was incomplete and recommended that the archipelago be returned to Mauritius.

• The United Nations General Assembly also passed a resolution urging the UK to withdraw its administration from the Chagos Archipelago.

• Diego Garcia Military Base:

• The United States operates a military base on Diego Garcia, which is crucial for its operations in the region.

• The base provides logistical and strategic support for missions in the Middle East and the Indian Ocean.

• The presence of the military base has added complexity to the dispute, as the US and UK argue its strategic importance outweighs the need for territorial resolution.

Important Points

• Historical Context:

• The Chagos Archipelago was separated from Mauritius in 1965, three years before Mauritius gained independence.

• The UK argues that Mauritius agreed to the separation in exchange for independence, while Mauritius claims it was coerced.

• Strategic Importance:

• The archipelago’s location in the Indian Ocean makes it a vital asset for military and defense operations.

• Diego Garcia is used for monitoring and conducting operations in the Middle East, Africa, and Asia.

• Human Rights Concerns:

• The original inhabitants of the Chagos Archipelago, known as the Chagossians, were forcibly removed by the UK in the 1960s and 1970s to make way for the military base.

• Chagossians have been fighting for their right to return to the islands, adding a humanitarian dimension to the territorial dispute.

Q16. Answer: (a) Madhya Pradesh

The correct answer is Madhya Pradesh.

Key Points

• The legislation was officially known as the Madhya Pradesh Lok Sewaon Ke Pradan Ki Guarantee Adhiniyam, 2010. It was later adopted by several other states in India.

• The legislation was aimed at reducing corruption and improving transparency and accountability in the public service delivery system.

• The success of this legislation in Madhya Pradesh inspired other states like Bihar, Karnataka, and Maharashtra to introduce similar laws, making it a significant step in governance reform.

• The legislation ensures that public services notified under the Act are delivered within a stipulated time frame. Examples include obtaining licenses, certificates, or other essential documents.

• The primary aim is to make public service delivery more efficient, transparent, and accountable.

• Examples of Similar Legislation in Other States:

• Karnataka: Karnataka introduced the Karnataka Sakala Services Act, which also aims at time-bound service delivery.

• These Acts have significantly contributed to reducing corruption and improving the efficiency of public service delivery.

• Many states have integrated technology to streamline the process of service delivery under these Acts. Online portals and mobile apps have been developed to ensure transparency and accessibility.

• Despite the success of the legislation, challenges like limited awareness among citizens, inadequate infrastructure, and resistance from bureaucracy remain.

• Continuous monitoring, capacity building of officials, and awareness campaigns are essential for the effective implementation of these Acts.

Q17. Answer: (a) Cancelled the land allotment due to lack of public benefit assessment

The correct answer is Cancelled the land allotment due to lack of public benefit assessment.

Key Points

• The Supreme Court of India reviewed the case concerning the land allotted to the Kamla Nehru Memorial Trust in Uttar Pradesh.

• The land was originally allotted to the Trust with the expectation of generating significant public benefit through its intended use.

• However, the Supreme Court found that there was a lack of assessment regarding whether the land was being utilized for the intended public benefit.

• The Court determined that the absence of a proper assessment violated the principles of ensuring that public resources are used for public welfare.

• As a result, the Supreme Court cancelled the land allotment, emphasizing the need for a comprehensive evaluation of public benefit in such cases.

• Hence, the correct answer is "Cancelled the land allotment due to lack of public benefit assessment."

Additional Information

• Kamla Nehru Memorial Trust:

• The Kamla Nehru Memorial Trust is a charitable organization aimed at promoting social welfare, education, and healthcare initiatives.

• It has been involved in multiple public welfare projects, including running educational institutions and healthcare facilities in Uttar Pradesh.

• Supreme Court’s Role in Land Allotment Cases:

• The Supreme Court plays a critical role in ensuring that public resources, including land, are allotted fairly and utilized for the intended public benefit.

• In cases of misuse or lack of compliance with the intended purpose, the Court has the authority to cancel allotments and mandate corrective actions.

• Public Benefit Assessment:

• Assessing public benefit involves evaluating whether the use of public land or resources aligns with the original objectives stated during the allotment process.

• Such assessments ensure that the allocation of resources contributes to the welfare of society and prevents misuse or private gain.

Important Points

• Key Legal Considerations:

• The Supreme Court's decision underscores the importance of adhering to the principles of public trust in allocating public resources.

• It also highlights the need for authorities to conduct periodic reviews to ensure compliance with the intended purpose of such allocations.

• Similar Case Examples:

• Noida Land Scam: The Court intervened to address irregularities in land allotment to private companies, emphasizing transparency and public benefit.

• Aravali Hills Case: The Court cancelled land allotments that were found to violate environmental laws and public interest principles.

Q18. Answer: (c) Sri Harmandir Sahib

The correct answer is Sri Harmandir Sahib.

Key Points

• The Golden Temple, located in Amritsar, Punjab, is a renowned religious site for followers of Sikhism. It is also referred to as Sri Harmandir Sahib, which means "The Abode of God."

• The temple is known for its architectural beauty, spiritual significance, and its role as the most sacred place in Sikhism.

• The Golden Temple is a symbol of equality and humility, welcoming visitors of all religions and backgrounds without discrimination. It promotes the Sikh principle of treating all humanity as one.

• The temple's construction was initiated by the fourth Sikh Guru, Guru Ram Das, in the year 1581. It was later completed under the supervision of Guru Arjan Dev, the fifth Sikh Guru.

• The temple is surrounded by the sacred Amrit Sarovar, a man-made water pool believed to have healing properties. Devotees often take a dip in this holy water as part of their spiritual practice.

• The Golden Temple is famous for its golden facade, which is covered with real gold leaf. The gold plating was added in the early 19th century by Maharaja Ranjit Singh, the leader of the Sikh Empire.

• The temple also houses the Akal Takht, one of the five seats of power in Sikhism, symbolizing the political sovereignty of the

Sikh community.

Additional Information

• Historical Significance:

• The Golden Temple was attacked several times during history, including the infamous Operation Blue Star in 1984. Despite these challenges, the temple remains a beacon of peace and resilience.

• The temple was rebuilt multiple times, showcasing the devotion and commitment of the Sikh community to preserve their sacred site.

• Architectural Features:

• The Golden Temple blends Hindu and Islamic architectural styles, signifying the unity and harmony among religions.

• Its golden dome is an iconic feature, while the marble base is adorned with intricate carvings and pietra dura work.

• Community Service:

• The temple runs the world's largest free community kitchen, the Langar, serving free meals to thousands of visitors daily, regardless of their caste, creed, or religion.

• This tradition embodies the Sikh principle of Seva (selfless service) and equality.

Important Points

• Option Analysis:

• Akal Takht: This is a part of the Golden Temple complex but not an alternative name for the Golden Temple.

• Anandpur Sahib: This is another prominent Sikh pilgrimage site located in Punjab, but it is distinct from the Golden Temple.

• Gurudwara Hemkunt Sahib: This is located in Uttarakhand and holds significance for Sikhism, but it is not related to the Golden Temple.

• Global Importance:

• The Golden Temple is one of the most visited religious sites globally and attracts millions of devotees annually.

Q19. Answer: (a) Ashoka

The correct answer is Ashoka.

Key Points

• The Lion Capital at Sarnath was erected by Emperor Ashoka during his reign in the 3rd century BCE.

• It is located at Sarnath, near Varanasi, in the modern-day state of Uttar Pradesh, India.

• The Lion Capital was originally placed atop the Ashokan Pillar, which is a monolithic column made of polished sandstone.

• The capital features four Asiatic lions seated back-to-back, symbolizing power, courage, pride, and confidence.

• The base of the Lion Capital includes a circular abacus adorned with sculptures of elephants, horses, bulls, and lions, separated by spoked wheels (Dharma Chakra).

• The National Emblem of India, adopted on 26 January 1950, is an adaptation of this Lion Capital. It excludes the fourth lion and the bell-shaped lotus base.

• The Lion Capital symbolizes the spread of the Dharma (righteousness) and the values of peace, non-violence, and justice as propagated by Ashoka following his conversion to Buddhism.

• Hence, Ashoka is the correct answer.

Additional Information

• About Emperor Ashoka:

• Ashoka was the third ruler of the Mauryan Empire and is regarded as one of the greatest emperors in Indian history.

• He reigned from 268 BCE to 232 BCE and played a key role in spreading Buddhism across India and other parts of Asia.

• Ashoka's transformation from a conqueror to a proponent of peace occurred after the Kalinga War, which caused immense suffering.

• Significance of the Lion Capital:

• The Lion Capital represents Buddhist ideals, including the promotion of harmony, justice, and moral governance.

• It was installed at Sarnath, the site where Gautama Buddha delivered his first sermon, known as the Dhammacakkappavattana Sutta.

• Other Ashokan Pillars:

• Ashoka commissioned numerous pillars across his empire, many of which feature inscriptions detailing his edicts and policies.

• These pillars are made of polished sandstone and are remarkable for their architectural precision and craftsmanship.

Important Points

• Adoption of the National Emblem:

• The Government of India adopted the Lion Capital as the National Emblem on 26 January 1950, the day India became a Republic.

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• The motto "Satyameva Jayate" (Truth Alone Triumphs), derived from the Mundaka Upanishad, is inscribed below the emblem.

• Other Options:

• Bindusara: The father of Ashoka, he was the second Mauryan emperor but is not associated with the Lion Capital.

• Devavarman Maurya: A later Mauryan ruler with no known contributions to monumental architecture like the Lion Capital.

• Samprati Maurya: A successor of Ashoka, known for promoting Jainism rather than Buddhism.

Q20. Answer: (c) Anorexia Nervosa

The correct answer is Anorexia Nervosa.

Key Points

• Anorexia Nervosa is a type of eating disorder characterized by the restriction of energy intake, resulting in significantly low body weight relative to age, sex, developmental trajectory, and physical health.

• It involves an intense fear of gaining weight or becoming fat, even though the individual is underweight. This fear leads to severe food restriction and unhealthy behaviors related to eating.

• People with anorexia nervosa may have a distorted body image, perceiving themselves as overweight even when they are dangerously thin.

• This disorder affects both males and females, though it is more commonly observed in adolescent females.

• Anorexia Nervosa can lead to severe health complications, including cardiac issues, osteoporosis, anemia, and multi-organ failure, if left untreated.

• One of the primary diagnostic criteria, as per the DSM-5 (Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition), includes a body weight that is significantly below the expected norm for the individual's age and height.

• It is a psychiatric condition and often requires a combination of psychological therapy, nutritional counseling, and medical intervention for effective treatment.

Additional Information

• Other Eating Disorders:

• Bulimia Nervosa: This disorder involves binge eating followed by compensatory behaviors such as self-induced vomiting, excessive exercise, or misuse of laxatives to prevent weight gain. Unlike anorexia, individuals with bulimia may maintain a normal body weight.

• Diabulimia Nervosa: A term used to describe an eating disorder in people with type 1 diabetes, where they deliberately restrict insulin to lose weight. It can lead to serious diabetic complications.

• Orthorexia Nervosa: This condition involves an obsession with eating "healthy" or "pure" foods. While not officially recognized as an eating disorder in the DSM-5, it shares similarities with other disorders and can result in nutritional deficiencies.

• Risk Factors for Anorexia Nervosa:

• Biological: Genetics and family history of eating disorders or mental illnesses.

• Psychological: Perfectionism, low self-esteem, and anxiety disorders.

• Social and Cultural: Societal pressures to achieve an unrealistic body image or thinness.

• Common Symptoms of Anorexia Nervosa:

• Extreme weight loss and refusal to maintain a healthy body weight.

• Preoccupation with food, dieting, and body image.

• Physical symptoms like hair thinning, cold intolerance, and irregular menstruation.

Important Points

• Diagnosis: Anorexia Nervosa is diagnosed through clinical interviews, physical examinations, and sometimes psychological assessments to evaluate the extent of the disorder.

• Treatment: The treatment approach often involves a multidisciplinary team consisting of medical professionals, dietitians, and mental health therapists. Cognitive-behavioral therapy (CBT) is one of the most effective treatment methods.

• Prognosis: Early intervention significantly improves outcomes. However, it is a chronic condition, and relapses can occur.

Q21. Answer: (c) The Peninsular plateau consists of three broad divisions, namely, the Northern Highlands, Central Highlands...

The correct answer is 3.

Key Points

• The Peninsular Plateau of India is a large, stable landmass made primarily of old crystalline, igneous, and metamorphic rocks. This geological feature is one of the oldest landforms in the world, dating back to the Precambrian Era.

• Statement 1: The Western Ghats are indeed higher than the Eastern Ghats. The Western Ghats have an average elevation of 900-1600 meters, while the Eastern Ghats are lower in elevation, averaging 600 meters. Hence, this statement is correct.

• Statement 2: The Deccan Plateau is a triangular landmass situated south of the river Narmada. This plateau is bordered by the

Satpura range in the north, the Western Ghats in the west, and the Eastern Ghats in the east. Hence, this statement is correct.

• Statement 3: The Peninsular Plateau does not consist of three broad divisions as mentioned in the statement. Instead, it is broadly divided into two main parts: the Central Highlands (lying north of the Narmada) and the Deccan Plateau (lying south of the Narmada). Thus, this statement is NOT correct.

• Statement 4: The Peninsular Plateau is indeed a tableland composed of old crystalline, igneous, and metamorphic rocks. This feature highlights its geological stability and ancient origins. Hence, this statement is correct.

Additional Information

• Geographical Significance of the Peninsular Plateau:

• The Peninsular Plateau is one of the largest physiographic divisions of India, covering an area of approximately 1.9 million square kilometers.

• It is bordered by the Aravalli Hills in the northwest, the Vindhya and Satpura ranges in the north, and the Eastern and Western Ghats on the eastern and western sides, respectively.

• Central Highlands:

• The Central Highlands lie to the north of the river Narmada and include the Malwa Plateau, Bundelkhand Plateau, and the Chotanagpur Plateau.

• These highlands are drained by rivers like the Chambal, Betwa, and Son, which flow in an eastward direction.

• Deccan Plateau:

• The Deccan Plateau lies to the south of the river Narmada and is triangular in shape, tapering towards the south.

• It is rich in black soil, which is ideal for the cultivation of cotton, and is drained by rivers like the Godavari, Krishna, and Kaveri.

• Western and Eastern Ghats:

• The Western Ghats are a continuous range of hills with an average elevation of 900-1600 meters and are known for their biodiversity.

• The Eastern Ghats are discontinuous and lower in elevation, averaging 600 meters. They are eroded by rivers like the Mahanadi, Godavari, and Krishna.

Important Points

• The Peninsular Plateau is known for its rich mineral resources, including coal, iron ore, manganese, and bauxite.

• The plateau is home to various types of vegetation, ranging from tropical deciduous forests to grasslands, depending on the region and climate.

• The Western Ghats are a UNESCO World Heritage Site and a biodiversity hotspot, housing several endemic species of flora and fauna.

• The rivers originating in the Peninsular Plateau are seasonal and primarily rain-fed, unlike the Himalayan rivers, which are perennial.

Q22. Answer: (d) Pradhan Mantri Gram Sadak Yojana

The correct answer is Pradhan Mantri Gram Sadak Yojana.

Key Points

• Pradhan Mantri Gram Sadak Yojana (PMGSY): This scheme was launched in 2000 by the Government of India to provide all-weather road connectivity to unconnected villages in rural areas.

• Objective: The main aim of PMGSY is to enhance rural connectivity, which is crucial for improving access to markets, education, healthcare, and other services.

• Scope: The scheme focuses on villages with a population of 500 and above in plain areas and 250 and above in hilly, tribal, or desert areas. Hence, it targets the most remote and underserved regions.

• Funding: PMGSY is a Centrally Sponsored Scheme, with funding shared between the Central Government and State Governments. The funding ratio differs based on the type of state (e.g., 60:40 for most states and 90:10 for Himalayan and Northeastern states).

• Implementation: The scheme is implemented by state governments through the Rural Development Department. A detailed project report (DPR) is prepared for each road project, ensuring quality and sustainability.

• Impact: PMGSY has significantly improved rural infrastructure, leading to better economic opportunities, reduced migration, and enhanced living standards in rural areas.

• Hence, the correct answer is Pradhan Mantri Gram Sadak Yojana.

Additional Information

• Other Schemes Mentioned in the Question:

• Saansad Adarsh Gram Yojana (SAGY): This scheme, launched in 2014, aims at the holistic development of villages by Members of Parliament adopting and developing model villages. However, it does not focus on road connectivity specifically.

• Deendayal Antyodaya Yojana - National Rural Livelihoods Mission (DAY-NRLM): This scheme, launched in 2011, focuses on

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promoting self-employment and skill development among rural poor households. It does not address rural road connectivity.

• Pradhan Mantri Awas Yojana (PMAY): This scheme, introduced in 2015, focuses on providing affordable housing to the urban and rural poor. It is not related to road infrastructure.

• Challenges in Rural Connectivity:

• Geographical Constraints: Areas with difficult terrain, such as hilly or flood-prone regions, face challenges in constructing all-weather roads.

• Funding Issues: Adequate funds are essential to ensure timely implementation and maintenance of roads.

• Quality Concerns: Ensuring the durability of rural roads is crucial, as poor-quality construction can lead to frequent repairs.

• Important Facts about PMGSY:

• Phase-I: Focused on providing connectivity to unconnected habitations.

• Phase-II: Launched in 2013, it aimed to consolidate existing rural road networks.

• Phase-III: Initiated in 2019, it focuses on upgrading rural roads for better connectivity to grameen agricultural markets and other essential services.

Important Points

• Significance of Rural Road Connectivity:

• Economic Growth: Improved road connectivity facilitates the transportation of goods and enhances access to markets, boosting rural incomes.

• Social Inclusion: Better roads improve access to education and healthcare, reducing inequalities in rural areas.

• Disaster Resilience: All-weather roads ensure connectivity even during adverse weather conditions, aiding in disaster management.

• Examples of Success:

• Bihar: PMGSY has helped in reducing migration by improving connectivity to employment opportunities.

• Rajasthan: Improved rural connectivity under PMGSY has boosted tourism in certain remote areas.

Q23. Answer: (d) 1988-89

The correct answer is 1988-89.

Key Points

• Special Food Grain Production Programme (SFPP) on Pulses was launched in 1988-89 by the Government of India to address the issue of inadequate production of pulses in the country.

• The programme aimed to increase the production of pulses through focused interventions, including better technology adoption, improved seed distribution, and enhanced farming practices.

• This initiative was part of a broader effort to ensure food security and reduce dependency on imports of pulses, which were a crucial source of protein for the Indian population. Hence, the correct answer is 1988-89.

• The programme targeted specific regions where pulse cultivation was feasible and promoted research and development in pulse farming to improve productivity.

• The SFPP on Pulses was integrated with other agricultural development programmes to align efforts and resources effectively. Hence, this initiative has had a significant impact on pulse production.

Additional Information

• Importance of Pulses in Agriculture and Nutrition:

• Pulses are a vital source of protein in the Indian diet, especially for vegetarians. They are also rich in essential nutrients like fiber, vitamins, and minerals.

• India is one of the largest producers and consumers of pulses, but demand often exceeds supply, leading to imports to meet domestic needs.

• The SFPP on Pulses was introduced to improve self-sufficiency in pulse production and reduce reliance on imports.

• Government Initiatives for Pulse Production:

• In addition to the SFPP, the government has implemented various schemes such as the National Food Security Mission (NFSM) to promote pulse production.

• Under the NFSM, subsidies are provided for quality seeds, fertilizers, and farm machinery to enhance pulse cultivation.

• Research institutions like the Indian Institute of Pulses Research (IIPR) contribute to the development of better pulse varieties and farming techniques.

Important Points

• Characteristics of Pulses:

• Pulses are leguminous crops that improve soil fertility through nitrogen fixation. This makes them an essential component of sustainable agriculture.

• Common types of pulses grown in India include chickpeas (gram), pigeon peas (arhar), lentils (masoor), mung beans, and urad.

• Impact of SFPP:

• The SFPP contributed significantly to improving pulse yields and reducing the yield gap in pulse cultivation.

• It emphasized the use of high-yielding varieties and the adoption of modern farming practices.

• The initiative also helped farmers increase their income by providing access to better resources and technologies.

Q24. Answer: (a) Central Government

The correct answer is Central Government.

Key Points

• Sampoorna Grameen Rozgar Yojana (SGRY) was launched by the Central Government of India in September 2001.

• The program aimed to provide employment opportunities in rural areas and ensure food security by offering wages partly in cash and partly in food grains.

• It was designed to improve the economic conditions of rural households and reduce unemployment in rural India. Hence, the Central Government initiated this program.

• The scheme was a consolidation of two earlier schemes: the Employment Assurance Scheme (EAS) and the Jawahar Gram Samridhi Yojana (JGSY), reflecting a more comprehensive approach to rural employment generation.

• It was implemented through the Panchayati Raj Institutions, ensuring decentralized governance and participation of local self-governments. However, the initiation was done by the Central Government.

• The scheme addressed rural infrastructure development by funding labor-intensive projects such as the construction of roads, irrigation facilities, and rural housing.

• Hence, the correct answer is Central Government.

Additional Information

• Sampoorna Grameen Rozgar Yojana (SGRY):

• The scheme was targeted at rural areas, focusing on providing employment opportunities to the poor and ensuring their basic needs through wage employment.

• Under the program, wages were paid in a combination of cash and food grains, ensuring both income generation and food security.

• The scheme was financed by the Central Government and supplemented by the State Governments. However, the major funding and overall management were under the purview of the Central Government.

• Implementation of the Scheme:

• The scheme was implemented through Panchayati Raj Institutions, enabling decentralized and participatory governance for rural development.

• The funds allocated under the scheme were used for labor-intensive projects such as the construction of rural roads, irrigation systems, and houses for the poor.

• It aimed to create durable assets in rural areas while addressing unemployment and underemployment among rural households.

• Wider Objectives:

• The scheme contributed to rural development by enhancing infrastructure and providing sustainable livelihoods to rural populations.

• It was a step toward eradicating poverty by ensuring employment and improving the standard of living in rural areas.

Important Points

• Key Characteristics:

• The SGRY scheme ensured equal participation of women, aiming to empower them economically and socially.

• The allocation of food grains under the scheme was significant, addressing the issue of malnutrition and hunger in rural India.

• Notable Achievements:

• The scheme improved rural employment rates and contributed to the creation of durable assets in many regions.

• It enhanced the quality of life in rural areas by addressing both economic and food-related challenges.

Q25. Answer: (d) Byrnihat

The correct answer is Byrnihat.

Key Points

• IQAir is a Swiss-based air quality technology company that specializes in real-time air quality data and solutions to combat pollution.

• Exposure to PM2.5 can cause serious health problems such as asthma, chronic obstructive pulmonary disease (COPD), and heart conditions.

• Byrnihat is located on the border between Meghalaya and Assam, making it a hub for industrial activities, including the manufacturing of cement, steel, and other goods.

• The World Health Organization (WHO) has set a safe limit for PM2.5 concentration at 5 µg/m³ annually. Anything above this is considered harmful to human health.

• Authorities can implement stricter emission standards for industries and promote the use of cleaner technologies.

• Plantation drives and the creation of green belts around industrial areas like Byrnihat can help absorb pollutants.

Q26. Answer: (d) Participation of workers in industrial management

The correct answer is Participation of workers in industrial management.

Key Points

• Article 43A of the Indian Constitution was introduced by the 42nd Amendment Act in 1976.

• It directs the State to take steps to ensure the participation of workers in the management of industries.

• This provision aims to promote a sense of partnership and responsibility among workers and encourage a spirit of democratic functioning within industrial organizations.

• Objective: Article 43A was included under the Directive Principles of State Policy (DPSP) to strengthen the concept of worker empowerment and industrial democracy.

• It is a non-justiciable directive, meaning it is not enforceable by courts but serves as a guideline for the government to enact laws and formulate policies.

• Various labor laws and schemes have been enacted to give effect to this principle, such as measures to involve workers in decision-making and management processes.

Additional Information

• Directive Principles of State Policy (DPSP):

• DPSPs are enshrined in Part IV of the Indian Constitution and aim to provide socio-economic justice and establish a welfare state.

• They are non-justiciable but serve as guiding principles for the government in policymaking.

• 42nd Amendment Act, 1976:

• This amendment is considered one of the most comprehensive amendments to the Indian Constitution.

• It introduced Article 43A, emphasizing workers' participation in industrial management.

• Examples of Implementation:

• Several labor laws, such as the Industrial Disputes Act and the Factories Act, encourage worker participation in grievance redressal and safety committees.

• Some industries have implemented worker-management councils to ensure dialogue and cooperation.

Important Points

• Key Features of Article 43A:

• It emphasizes the role of workers in industrial management to foster a spirit of democracy in industry.

• Though non-enforceable, it serves as a foundation for worker empowerment legislation.

• Comparison with Other DPSPs:

• Unlike other articles like Article 41 (Right to work) and Article 42 (Provision for maternity relief), Article 43A uniquely focuses on worker participation in management.

• It complements other DPSPs that aim to improve labor conditions and promote economic justice.

Q27. Answer: (c) Pooja Singh

The correct answer is Pooja Singh.

Key Points

• Pooja Singh won the gold medal in the women's high jump at the 2025 Asian Athletics Championships, demonstrating her excellence in the sport and elevating India's reputation in athletics.

• The Asian Athletics Championships is a prestigious event where top athletes from Asia compete, making Pooja Singh's victory a significant achievement for her and the nation.

• Pooja Singh's victory reflects her dedication, rigorous training, and exceptional performance on the international stage. Her achievement has inspired many young athletes to pursue sports as a career.

• The event highlighted India's increasing prominence in the field of track and field athletics, with athletes like Pooja Singh setting new benchmarks for excellence.

• High jump is a technical event that requires a combination of speed, strength, and precision. Pooja Singh's success in this discipline underscores her mastery of these skills.

• Her performance at the 2025 Asian Athletics Championships not only earned her a gold medal but also served as a testament to her hard work and India's growing stature in athletics.

Additional Information

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• About Pooja Singh:

• Pooja Singh is an emerging Indian athlete specializing in the high jump. She has been training extensively under experienced coaches and has shown consistent improvement in her performance.

• Her victory at the 2025 Asian Athletics Championships marked a major milestone in her career, showcasing her potential to compete at the Olympic level.

• The High Jump Event:

• The high jump is a track and field event in which competitors must jump over a horizontal bar placed at measured heights without the aid of any devices.

• Athletes use techniques such as the Fosbury Flop, which involves jumping backward over the bar, to maximize their clearance height.

• This event requires a combination of speed, strength, flexibility, and precision, making it one of the most technically challenging disciplines in athletics.

• Asian Athletics Championships:

• The Asian Athletics Championships is a biennial event organized by the Asian Athletics Association, featuring top athletes from across Asia.

• The championship provides a platform for athletes to compete at an international level and serves as a stepping stone for global events like the Olympics and World Championships.

• India has a strong history of success in this competition, with athletes excelling in track and field events like sprints, long-distance running, and jumps.

Important Points

• Notable Achievements in Indian Athletics:

• Indian athletes have consistently performed well in international events, with recent successes in javelin throw, long jump, and track events.

• Athletes like Neeraj Chopra (javelin throw) and Hima Das (sprinting) have brought global recognition to Indian athletics.

• Preparation for International Events:

• Athletes undergo rigorous training, including strength and conditioning, technical skill development, and mental preparation, to compete at the highest level.

• Government initiatives like the Target Olympic Podium Scheme (TOPS) and support from private organizations have played a crucial role in nurturing talent.

• Facilities like state-of-the-art training centers and exposure to international competitions have helped athletes achieve their full potential.

Q28. Answer: (b) Saving temporary files in unrelated and scattered folders

The correct answer is Saving temporary files in unrelated and scattered folders.

Key Points

• Saving temporary files in unrelated and scattered folders:

• This is a poor file management practice as it leads to disorganization, making it difficult to locate files when needed. Scattered files across multiple folders result in wasted time searching for data.

• When temporary files are saved in unrelated folders, they can disrupt the intended folder structure and organization, creating a chaotic system.

• Unrelated and scattered storage increases the risk of data duplication, loss, or accidental deletion.

• It can also negatively affect the performance of the computer system due to cluttered storage and difficulty in performing system maintenance tasks.

• Giving files meaningful and descriptive names:

• This is a good file management practice as it helps in easy identification and retrieval of files. Hence, this statement is correct.

• Creating separate folders for documents, images, and videos:

• Organizing files by type and creating separate folders for different categories (such as documents, images, and videos) ensures systematic storage and easy access. Hence, this statement is correct.

• Using nested folders to organize large sets of data:

• Nested folders are an effective way to manage large datasets by grouping related files together in a logical hierarchy. This is a recommended file management strategy. Hence, this statement is correct.

Additional Information

• Characteristics of Good File Management Practices:

• Meaningful Naming: Files should be named descriptively to reflect their content or purpose. Example: Instead of "doc1.doc," use "ProjectProposal_March2023.doc."

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• Consistent Folder Structure: Organizing data into folders and subfolders based on categories (e.g., work, personal, images, videos) ensures clarity.

• Regular Clean-Up: Periodically reviewing and deleting unnecessary files prevents storage clutter and enhances system efficiency.

• Backups: Regularly backing up important files to external drives or cloud storage ensures data safety in case of system failure.

• Impact of Poor File Management:

• Time Wastage: Searching for misplaced or unnamed files can significantly reduce productivity.

• Data Loss: Scattered and poorly managed files increase the risk of accidental deletion or overwriting.

• System Inefficiency: A cluttered system with scattered files can slow down operations and affect performance.

Important Points

• Examples of Poor File Management:

• Saving temporary files in multiple locations like desktop, downloads, and random folders.

• Using generic file names like "file1," "image," or "document" without any descriptive context.

• Failure to archive older files, leading to clutter and difficulty in distinguishing between active and inactive data.

• File Management Tools:

• File management software like Windows File Explorer, Finder (Mac), or third-party tools like Total Commander can streamline file organization.

• Cloud storage platforms like Google Drive, Dropbox, and OneDrive offer additional organization and accessibility features.

Q29. Answer: (d) Statement 2 is correct and 1 is incorrect

The correct answer is Option 4.

Key Points

• Statement 1: INDRA is not a bilateral naval exercise between India and South Africa. It is a bilateral exercise between India and Russia. The exercise focuses on enhancing military cooperation and interoperability between the two nations. Hence, statement 1 is incorrect.

• Statement 2: The 14th edition of the INDRA exercise included a wide range of activities and structured drills designed to enhance interoperability towards countering common maritime threats. This is an accurate description of the exercise, which involves joint operations, drills, and mutual learning between the participating forces. Hence, statement 2 is correct.

• Hence, the correct answer is Option 4.

Additional Information

• INDRA Exercise:

• INDRA is a joint military exercise conducted between India and Russia. It aims to enhance cooperation, promote interoperability, and strengthen military-to-military relations.

• The exercise encompasses a variety of operations, including ground forces, naval drills, and air force maneuvers. It is conducted in alternating years in India and Russia.

• Example: The 14th edition included maritime drills focusing on countering threats like piracy, terrorism, and illegal trafficking.

• India-South Africa Military Cooperation:

• India and South Africa have bilateral defense ties, but INDRA is not conducted with South Africa. Instead, other bilateral exercises, such as naval engagements, are conducted.

• For example, India has participated in naval drills with South Africa during multilateral exercises like IBSAMAR, which includes Brazil.

• Significance of INDRA:

• The INDRA exercise strengthens the strategic partnership between India and Russia. It addresses emerging threats such as terrorism, maritime security, and geopolitical instability.

• It also serves as a platform for exchanging best practices and enhancing defense capabilities.

Important Points

• Other Bilateral Exercises:

• SIMBEX: Conducted between India and Singapore to enhance maritime cooperation.

• VARUNA: A naval exercise between India and France focusing on maritime security and anti-submarine warfare.

• MALABAR: A trilateral naval exercise between India, the USA, and Japan, occasionally involving other nations like Australia.

• India’s Strategic Maritime Goals:

• India aims to strengthen its presence in the Indian Ocean Region (IOR) and enhance regional security.

• Joint exercises like INDRA help build stronger relations with key allies like Russia.

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Q30. Answer: (d) Static Random Access Memory

The correct answer is Static Random Access Memory (SRAM).

Key Points

• SRAM stands for Static Random Access Memory: It is a type of computer memory that uses flip-flop circuits to store each bit of data. It retains data as long as power is supplied, without needing to be refreshed constantly, unlike Dynamic RAM (DRAM).

• Non-volatile Behavior: Unlike DRAM, which requires periodic refreshing, SRAM does not need continuous refresh cycles. This makes it faster and more reliable for certain applications. Hence, the correct option is 4.

• Usage in Cache Memory: SRAM is commonly used in CPU cache memory and registers due to its high speed and low latency. It provides quick access to frequently used data, improving system performance.

• Structure and Function: SRAM uses a six-transistor (6T) design to store each bit of information. These transistors maintain the state (0 or 1) without requiring constant refreshing.

• Power Consumption: While SRAM is faster and more reliable, it consumes more power compared to DRAM. It is typically used in applications where speed is prioritized over power efficiency.

• Applications: SRAM is used in embedded systems, networking devices, microprocessors, and mobile devices. Its high speed makes it ideal for temporary storage and caching purposes.

• Hence, the correct answer is Static Random Access Memory (SRAM).

Additional Information

• Comparison between SRAM and DRAM:

• SRAM: Faster, does not require refreshing, and uses flip-flop circuits for data storage. It is used in cache memory and high-speed applications.

• DRAM: Slower than SRAM, requires periodic refreshing, and uses capacitors for data storage. It is commonly used in main memory due to its cost-effectiveness and higher density.

• Features of SRAM:

• Speed: SRAM is significantly faster than DRAM, making it suitable for applications requiring quick data access.

• Cost: SRAM is more expensive than DRAM due to its complex design and lower density.

• Power Consumption: While SRAM is faster, it consumes more power compared to DRAM.

• Examples of SRAM Usage:

• Cache Memory: SRAM is widely used in CPU cache (L1, L2, and L3) to store frequently accessed data.

• Embedded Systems: Many embedded systems use SRAM for temporary storage due to its speed and reliability.

• Networking Devices: SRAM is used in routers and switches to store routing tables and other temporary data.

Important Points

• Advantages of SRAM:

• High Speed: SRAM provides faster data access compared to DRAM, making it ideal for high-performance systems.

• Reliability: SRAM is more reliable since it does not rely on capacitors that can lose charge over time.

• Disadvantages of SRAM:

• Cost: The complex design of SRAM makes it more expensive than DRAM.

• Power Consumption: SRAM consumes more power, making it less suitable for power-sensitive applications.

Q31. Answer: (a) ISRO

The correct answer is ISRO.

Key Points

• ISRO (Indian Space Research Organisation) is India's premier space agency, established in 1969. It is responsible for the country's space exploration and satellite technology development.

• Vikram 3201 and Kalpana 3201 microprocessors were developed by ISRO for space applications in 2025. These processors are designed to enhance computational power and efficiency in satellite and spacecraft operations.

• The development of such processors is part of ISRO's initiative to reduce dependency on foreign technologies and promote indigenous advancements in aerospace and defense sectors. Hence, ISRO is the correct answer.

• ISRO's focus on microprocessor technology aligns with its mission to make India self-reliant in critical space hardware. These processors are expected to support advanced communication, navigation, and scientific experiments in space missions.

• Vikram 3201 and Kalpana 3201 are named after two renowned figures in Indian space history: Vikram Sarabhai, the father of the Indian space program, and Kalpana Chawla, the first Indian-origin woman astronaut. This reflects ISRO's tradition of honoring pioneers in the field.

Additional Information

• ISRO:

• ISRO is headquartered in Bengaluru, India. It has been instrumental in launching satellites for communication, navigation, and earth observation.

• Some of ISRO's landmark achievements include Chandrayaan missions to the moon, Mangalyaan (Mars Orbiter Mission), and its series of PSLV and GSLV launch vehicles.

• Microprocessors in Space Applications:

• Microprocessors play a crucial role in managing spacecraft systems, conducting scientific experiments, and ensuring reliable communication with ground stations.

• Indigenous processors like Vikram 3201 and Kalpana 3201 reduce India's dependency on foreign suppliers and improve the security and reliability of space missions.

• They are designed to withstand the harsh conditions of space, including radiation and extreme temperatures.

• Other Organizations in India:

• BARC: The Bhabha Atomic Research Centre focuses on nuclear research and energy production, not space technology.

• BEL: Bharat Electronics Limited specializes in defense electronics and communication systems but does not develop microprocessors for space applications.

• DRDO: The Defence Research and Development Organisation focuses on defense technologies, including missile systems, but is not primarily involved in space missions.

Important Points

• Vikram 3201 and Kalpana 3201 Features:

• These microprocessors are designed to handle complex algorithms, ensuring precision in satellite navigation and communication systems.

• They are equipped with radiation-hardening technologies to ensure reliability in the extreme environment of space.

• Future Applications:

• Vikram 3201 and Kalpana 3201 are expected to be used in upcoming missions, including interplanetary exploration and advanced earth observation satellites.

• They will also support real-time data processing for scientific experiments conducted in space.

Q32. Answer: (b) Freedom from arrest

The correct answer is Freedom from arrest.

Key Points

• Article 19 of the Indian Constitution guarantees six freedoms to the citizens of India, which are fundamental rights under Part III of the Constitution.

• The six freedoms guaranteed under Article 19 include:

• Freedom of speech and expression

• Freedom to assemble peaceably and without arms

• Freedom to form associations or unions

• Freedom to move freely throughout the territory of India

• Freedom to reside and settle in any part of India

• Freedom to practice any profession or to carry on any occupation, trade, or business

• The option "Freedom from arrest" is NOT one of the six freedoms guaranteed under Article 19. This is a misconception as the protection against arbitrary arrest falls under Article 21 and Article 22 of the Constitution, which deal with the right to life and personal liberty.

• Article 21 provides protection against arbitrary deprivation of life and personal liberty except according to the procedure established by law.

• Article 22 provides specific protections in cases of preventive detention and outlines the rights of an individual during arrest, such as being informed of the grounds of arrest and the right to consult a legal practitioner.

• Thus, while the right to protection from arbitrary arrest is a fundamental right under the Constitution, it is not covered under Article 19. Hence, the correct answer is Freedom from arrest.

Additional Information

• Fundamental Rights under the Indian Constitution:

• The Indian Constitution guarantees fundamental rights to all citizens, which are enshrined in Part III (Articles 12-35).

• These rights aim to protect individuals against arbitrary state actions and ensure equality, freedom, and justice for all.

• Details of Article 19:

• Freedom of speech and expression: Allows citizens to express their views freely.

• Freedom to assemble: Permits peaceful assembly without arms.

• Freedom to form associations: Empowers citizens to form unions, societies, or organizations.

• Freedom to move freely: Ensures free movement across the country.

• Freedom to reside and settle: Allows individuals to reside in any part of India.

• Freedom of profession: Protects the right to choose any profession, occupation, or trade.

• Articles related to arrest and personal liberty:

• Article 21: Protects life and personal liberty; it is a broad and dynamic right that includes various aspects like the right to privacy, the right to a fair trial, and protection from arbitrary arrest.

• Article 22: Provides protection against arrest and preventive detention. It includes safeguards such as informing the individual of the grounds for arrest, presenting the person before a magistrate within 24 hours, and providing legal counsel.

Important Points

• Freedom from arbitrary arrest: While not part of Article 19, this right is protected under Articles 21 and 22, ensuring procedural safeguards and minimizing misuse of authority.

• Interrelation of Fundamental Rights: Fundamental rights are interdependent. For example, the right to freedom of movement under Article 19 complements the protection of personal liberty under Article 21.

• Judicial Interpretation: The Supreme Court of India has expanded the scope of Articles 19, 21, and 22 through landmark judgments, reinforcing the protection of individual freedoms and liberties.

Q33. Answer: (b) Pataliputra

The correct answer is Pataliputra.

Key Points

• Historical sources indicate that the first major council to attempt the compilation and systematisation of Jain scriptures took place in Pataliputra (modern-day Patna).

• This event is traditionally associated with the end of a period of famine and the reign of Chandragupta Maurya (around the 4th or 3rd century BCE).

• The primary goal was to gather the scattered Jain texts (Agamas) and arrange them systematically.

• While this council marked the first significant effort towards systematisation, it's believed that the complete canon might not have been finalised or perfectly preserved, especially in the North, due to subsequent events and the loss of oral traditions. However, it laid the foundation for scriptural organisation.

Additional Information

• Jain Canonical Literature:

• Initially, these teachings were transmitted orally by Jain monks. However, oral transmission became challenging due to loss of knowledge over time and external invasions.

• Vallabhi as a Historical Center:

• It was particularly renowned for its contribution to Jainism, especially the preservation and compilation of Jain texts.

• The written compilation ensured that Jain teachings were not lost due to the decline of oral traditions.

• The compilation effort at Vallabhi represents a landmark in the history of Jainism and Indian literature.

• Key Characteristics of Jain Agamas: They encompass ethical principles, philosophical teachings, and rules for ascetic practices.

Q34. Answer: (d) Article 243S

The correct answer is Article 243S.

Key Points

• Article 243S of the Constitution of India provides for the formation of Ward Committees in Municipal areas.

• According to Article 243S, Ward Committees are mandatory for municipalities with a population of 3 lakh or more.

• These committees are formed to ensure local representation and to facilitate decentralized decision-making at the ward level. Hence, the statement is correct.

• Ward Committees consist of members elected from the wards within the jurisdiction of the municipality and aim to represent the interests of the residents of those wards.

• The Chairperson of the municipality is also a member of the Ward Committee, providing a link between municipal governance and local governance.

• Article 243S emphasizes the importance of inclusive governance and ensures that the needs and concerns of smaller communities within municipal boundaries are addressed effectively.

• It is part of the 74th Constitutional Amendment Act, 1992, which aimed to strengthen urban local bodies in India. Hence, the correct answer is Article 243S.

Additional Information

• 74th Constitutional Amendment Act:

• The 74th Amendment introduced provisions for urban local governance, including the formation of municipalities and Ward Committees.

• It aims to provide a framework for decentralized governance and ensure grassroots democracy in urban areas.

• Ward Committees:

• These are formed at the ward level to address local issues such as sanitation, water supply, waste management, and public infrastructure.

• They act as an interface between citizens and the municipal administration, ensuring better service delivery and representation.

• Example: Ward Committees in cities like Bangalore and Mumbai play a critical role in urban governance.

• Population Criteria:

• Ward Committees are mandatory for municipalities with a population of 3 lakh or more, ensuring their relevance in densely populated urban areas.

• In smaller municipalities, similar mechanisms may exist but are not mandated by Article 243S.

Important Points

• Decentralized Governance:

• Ward Committees are an essential part of decentralized governance, enabling citizen participation in decision-making processes.

• They improve the efficiency of municipal governance by addressing local needs more effectively.

• Challenges in Implementation:

• In many cities, Ward Committees face challenges such as lack of funding, inadequate powers, and bureaucratic hurdles.

• Strengthening the role and functions of Ward Committees can significantly improve urban governance and service delivery.

Q35. Answer: (b) Launch Pad Three

The correct answer is Launch Pad Three.

Key Points

• Launch Pad Three is the third launch facility at the Sriharikota Range operated by the Indian Space Research Organisation (ISRO).

• Sriharikota houses multiple launch pads for satellite launches, each designed for specific missions, including PSLV, GSLV, and other future launch vehicles.

• The addition of Launch Pad Three was approved by the Indian government in 2025 to meet the growing demand for space missions. Hence, option 2 is correct.

• Sriharikota, located in Andhra Pradesh, is India's primary spaceport and has played a pivotal role in the country's space exploration programs.

• The setup of Launch Pad Three is expected to boost India's capabilities in launching satellites and interplanetary missions, contributing to ISRO's vision of self-reliance in space technology.

Additional Information

• Sriharikota Launch Facility:

• Sriharikota, officially known as the Satish Dhawan Space Centre (SDSC), is located in the state of Andhra Pradesh, India.

• It serves as the main launch site for India's satellite missions, including the Polar Satellite Launch Vehicle (PSLV) and Geosynchronous Satellite Launch Vehicle (GSLV).

• India's Growing Space Ambitions:

• The approval of Launch Pad Three is a strategic step to accommodate the increasing number of satellite launches and interplanetary missions.

• This expansion aligns with India's goal to become a leader in space exploration and satellite technology.

• Features of Launch Pads:

• Launch Pad One and Two have historically supported major missions like Chandrayaan, Mangalyaan, and GSAT launches.

• Launch Pad Three is designed to support newer, heavier, and more advanced launch vehicles, including future missions like Gaganyaan.

Important Points

• ISRO's Achievements:

• ISRO has successfully launched over 300 satellites for domestic and international clients, demonstrating its reliability and cost-effectiveness.

• The Chandrayaan and Mangalyaan missions highlight India's capability in interplanetary exploration.

• Future Missions:

• Gaganyaan: India's first crewed space mission, set to launch from Sriharikota.

• Aditya-L1: A solar mission to study the Sun's corona and solar winds.

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Q36. Answer: (a) First

The correct answer is First.

Key Points

• The services sector has consistently been a top contributor to India's economy, playing a crucial role in attracting Foreign Direct Investment (FDI).

• As per the Ministry of Commerce and Industry, in FY 2024-25, the services sector emerged as the top recipient of FDI equity.

• This sector includes key industries such as IT & IT-enabled services (ITeS), banking, financial services, insurance, real estate, and consulting, which remain attractive to foreign investors.

• The ranking signifies the importance of the sector in driving economic growth, creating employment opportunities, and fostering technological advancements in India.

• The focus on digitalization, policy reforms, and government initiatives such as Startup India and Digital India has further boosted FDI inflows into the services sector.

• Hence, the correct answer is First.

Additional Information

• FDI in the Services Sector:

• The services sector has been a critical driver of FDI inflows in India, attracting investment from countries like the USA, UK, Singapore, and Japan.

• It is preferred due to India's skilled workforce, cost competitiveness, and growing consumer base.

• Sectors such as software services, telecommunications, and financial services are the leading recipients within the services domain.

• Government Initiatives:

• Startup India: Encourages entrepreneurship and innovation, attracting foreign venture capital.

• Digital India: Focuses on digital infrastructure, e-governance, and online services, enhancing the IT sector's appeal to investors.

• Make in India: Aims to promote India as a global manufacturing and services hub.

• FDI Equity Inflows:

• FDI equity inflows reflect the confidence of international investors in India's economic policies and growth potential.

• In FY 2024-25, the services sector accounted for the largest share, emphasizing its strategic importance.

Important Points

• FDI Trends:

• India has witnessed a continuous rise in FDI inflows, driven by policy liberalization and investor-friendly measures.

• The services sector remains the most sought-after, followed by other sectors like manufacturing and infrastructure.

• Contribution to GDP:

• The services sector contributes over 50% to India's Gross Domestic Product (GDP), underlining its economic significance.

Q37. Answer: (b) South Africa

The correct answer is South Africa.

Key Points

• Satyagraha is a non-violent method of resistance or civil disobedience introduced by Mahatma Gandhi.

• The method was first conceptualized and practiced in South Africa during Gandhi's struggle against racial discrimination. Hence, this part of the question is correct.

• However, in India, the first significant application of Satyagraha as a tool of freedom struggle took place in 1917 at Champaran (currently in Bihar), where Gandhi fought for the rights of indigo farmers being exploited by British planters.

• The success of the Champaran Satyagraha made it a model for subsequent movements in Kheda (1918), Ahmedabad Mill Strike (1918), and other parts of India. This makes the Champaran movement highly significant in India's freedom struggle.

• While the method was further refined and implemented in various other regions, including Kheda and Bombay, the foundational development and success of Satyagraha in India are attributed to Champaran.

Additional Information

• Champaran Satyagraha:

• The Champaran Satyagraha (1917) was initiated to address the grievances of indigo cultivators forced to grow indigo under the tinkathia system, wherein farmers were compelled to cultivate indigo on a portion of their land and sell it at prices fixed by the British planters.

• Gandhi's leadership and non-violent resistance led to the abolition of the oppressive system, marking a turning point in India's freedom struggle.

• Satyagraha in South Africa:

• Gandhi first developed the philosophy of Satyagraha during his struggle against racial discrimination in South Africa (1893-1914).

• His campaigns included resistance to unjust laws like the Asiatic Registration Act and the denial of civil rights to Indians in South Africa.

• Other Movements in India:

• Kheda Satyagraha (1918): Gandhi supported farmers in Gujarat who were unable to pay taxes due to a famine. The success of this movement further strengthened the idea of non-violent resistance.

• Ahmedabad Mill Strike (1918): Gandhi mediated between workers and mill owners, advocating for wage increases and workers' rights.

• Dandi March (1930): Another notable application of Satyagraha where Gandhi protested the British salt monopoly through the Salt Satyagraha.

Important Points

• Key Characteristics of Satyagraha:

• It is based on the principle of non-violence (ahimsa) and truth (satya).

• It involves civil disobedience, non-cooperation, and peaceful resistance to unjust laws.

• Impact of Champaran Satyagraha:

• It marked the beginning of Gandhi's active involvement in India's freedom struggle.

• It inspired other leaders and movements, setting the stage for the nationalist movement.

Q38. Answer: (a) Arjun Erigaisi

The correct answer is Arjun Erigaisi.

Key Points

• Arjun Erigaisi is a young and talented chess player from India who has made significant progress in the field of chess in recent years.

• He became the first Indian chess player to qualify for the Esports World Cup (EWC) 2025, achieving this milestone during the second leg of the Champions Chess Tour.

• The Champions Chess Tour is a global tournament that brings together the best players from across the world, showcasing high-level competitive chess. Arjun's qualification highlights his skills and determination.

• This achievement is a significant milestone in Indian chess history, as it places India firmly on the global map of competitive esports and chess. Hence, the correct answer is Arjun Erigaisi.

• Arjun's success is seen as an inspiration for aspiring chess players in India, encouraging them to participate in international competitions.

Additional Information

• About Arjun Erigaisi:

• Arjun Erigaisi is an Indian Grandmaster who has rapidly risen through the ranks of international chess. He was born on 3 September 2003 in Telangana, India.

• He became a Grandmaster at the age of 14, showcasing his extraordinary talent and dedication.

• Arjun has represented India in various international tournaments, gaining recognition for his strategic gameplay and consistent performance.

• Esports World Cup (EWC):

• The Esports World Cup is an annual global esports competition that includes multiple games, including chess, highlighting the growing influence of esports in traditional games.

• The event attracts players from across the world, making it one of the most prestigious platforms for competitive gaming.

• Arjun's qualification for the 2025 EWC reflects India's increasing prominence in both chess and esports.

• Champions Chess Tour:

• The Champions Chess Tour is a series of elite online chess tournaments that feature the world's best players. It includes multiple legs, with each leg providing players an opportunity to qualify for higher levels.

• The tour is organized by Chess.com, a leading platform for online chess games, and serves as a stepping stone for players aiming to achieve international recognition.

Important Points

• Arjun Erigaisi's Recent Achievements:

• In 2022, Arjun won the Tata Steel Chess India Rapid tournament, defeating many strong opponents.

• He has also been a key player in India's chess team, contributing to victories in international team events.

• Impact of Arjun's Success:

• Arjun's achievements inspire young chess players in India to aspire for global recognition.

• His qualification for the Esports World Cup demonstrates the growing synergy between traditional games like chess and the esports industry.

Q39. Answer: (b) Tamil Nadu

The correct answer is Tamil Nadu.

Key Points

• Tamil Nadu is the leading state in commercial floriculture cultivation in India, contributing more than 20% of the country's total production in FY 2024. This makes it the largest contributor to floriculture in the nation.

• The state has a favorable climate for cultivating flowers, with its tropical and subtropical weather supporting the growth of a variety of flowers such as roses, jasmine, marigolds, and orchids.

• Key districts such as Madurai, Dindigul, and Salem are known for their floriculture activities, with Madurai being particularly famous for its jasmine production. Hence, Tamil Nadu is the correct option.

• Floriculture in Tamil Nadu is also supported by advanced irrigation systems, favorable soil conditions, and a skilled labor force. The state has made significant strides in adopting modern techniques like greenhouse and polyhouse farming.

• The government of Tamil Nadu has implemented various policies and subsidies to promote floriculture, including financial assistance for setting up nurseries and the adoption of advanced technologies. This highlights the state's commitment to enhancing the floriculture industry.

Additional Information

• Floriculture in India:

• India is one of the largest producers of flowers globally, with a dedicated area of over 3 lakh hectares under floriculture cultivation.

• States like Tamil Nadu, Karnataka, Maharashtra, West Bengal, and Andhra Pradesh are key players in the industry, contributing significantly to domestic and international markets.

• India's floriculture exports have seen growth due to increasing demand for fresh flowers and ornamental plants in countries like the Netherlands, Germany, the USA, and Japan.

• Key Characteristics of Tamil Nadu's Floriculture Sector:

• The state specializes in both loose flowers and cut flowers. Loose flowers such as jasmine and marigold are primarily for domestic use, while cut flowers like roses are targeted for exports.

• Jasmine, also known as the "Queen of Flowers," is a major crop in Tamil Nadu. The Madurai Malli variety of jasmine is highly popular for its fragrance and quality.

• Tamil Nadu is also known for its extensive use of greenhouse technology, which ensures year-round production and higher yields.

• Important Figures and Exports:

• In FY 2024, Tamil Nadu accounted for over 20% of India's total floriculture production, highlighting its dominance in the sector.

• The state contributes significantly to India's flower exports, with a substantial portion going to international markets, particularly in Europe and Asia.

Important Points

• Other States in Floriculture:

• West Bengal: Known for marigold and tuberose production, the state ranks high but does not surpass Tamil Nadu in total contribution.

• Karnataka: Another major player in floriculture, known for roses and orchids, with Bengaluru often referred to as the "Garden City of India."

• Chhattisgarh: A smaller contributor, focusing on marigold and ornamental plants, but does not account for a significant percentage of India's production.

• Government Initiatives:

• National Horticulture Mission (NHM): Aimed at promoting floriculture through subsidies, training, and infrastructure development.

• Floriculture Development Scheme: Specific to states like Tamil Nadu, this scheme provides financial aid for setting up nurseries and adopting modern farming techniques.

Q40. Answer: (b) Chenab Bridge

The correct answer is Chenab Bridge.

Key Points

• Chenab Bridge is the world's highest railway bridge, located in the Reasi district of Jammu and Kashmir, India. It stands at an incredible height of 359 meters (1,178 feet) above the riverbed.

• The bridge is part of the Udhampur-Srinagar-Baramulla Rail Link Project (USBRL), a crucial initiative to connect the Kashmir Valley with the Indian railway network.

• It is constructed over the Chenab River and spans a total length of 1,315 meters (4,314 feet), making it a remarkable feat of engineering.

• Construction: The construction of the bridge began in 2004 and was completed in August 2022. It involved the use of advanced technologies and materials to withstand harsh weather conditions, including high-speed winds of up to 266 km/h.

• Materials and Design: The bridge is made of steel and concrete, ensuring durability and strength. Its design is earthquake-resistant and adheres to international safety standards.

• Significance: The Chenab Bridge enhances connectivity and boosts economic development in the remote regions of Jammu and Kashmir. It also plays a vital role in national security by enabling easier troop movement.

• The bridge's completion symbolizes a major step forward in India's infrastructure development and engineering capabilities.

Additional Information

• Other Bridges Mentioned in the Options:

• Jubilee Bridge: This bridge is located in West Bengal, India, and was built in 1887. It was an important railway bridge over the Hooghly River, but it has now been replaced by the Vivekananda Setu.

• Vikramshila Setu: Located in Bihar, India, this bridge spans the Ganges River. It connects Bhagalpur to nearby regions and is one of the longest bridges in India, at approximately 4.7 kilometers in length.

• Nehru Setu Bridge: Situated in Bihar, this is a railway bridge over the Son River. It is one of the oldest bridges in India, constructed in 1900, and remains operational to date.

• Udhampur-Srinagar-Baramulla Rail Link Project:

• This is a strategic railway project aimed at providing all-weather connectivity to Jammu and Kashmir.

• The project includes the construction of several tunnels and bridges, with the Chenab Bridge being its most iconic structure.

• It is expected to significantly reduce travel time and improve accessibility for the local population.

• Important Features of Chenab Bridge:

• It features a unique arch design, which provides greater stability and strength.

• The bridge has been designed to withstand extreme weather conditions, including seismic activity and high winds.

• It is equipped with state-of-the-art monitoring systems to ensure safety and structural integrity.

Q41. Answer: (d) Rs. 15,390

Shortcut Trick

The multiplying factors for successive discounts of 10% and 5% are 9/10 and 19/20 respectively.

Selling Price (SP) = Marked Price (MP) × Discount Multipliers

SP = 18000 × (9/10) × (19/20)

SP = 18000 × (171/200) = 90 × 171 = 15390

Therefore The correct answer is Rs. 15,390.

Alternate Method

Given:

Marked Price (MP) = Rs. 18,000

First successive discount (D1) = 10%

Second successive discount (D2) = 5%

Formula Used:

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

Rs. 18,000

Marked Price

−10%

Rs. 16,200

After 1st Discount

−5%

Rs. 15,390

Selling Price

Calculations:

=> SP = 18000 × (1 − 10/100) × (1 − 5/100)

=> SP = 18000 × (90/100) × (95/100)

=> SP = 18000 × (9/10) × (19/20)

=> SP = 18000 × 171/200

=> SP = 90 × 171

=> SP = 15390

Therefore The correct answer is Rs. 15,390.

Additional Information

Successive Discount Formula

When two successive discounts of a% and b% are given, the equivalent single discount percentage is calculated as (a + b − ab/100)%.

Marked Price vs Cost Price

Marked price (MP) is derived by adding a markup percentage to the cost price: MP = CP × (1 + Markup/100). Discounts are always applied on the Marked Price, never on the Cost Price.

Selling Price Relation

Selling Price connects the manufacturer to the buyer. It can be found from MP via discounts: SP = MP × (1 − Discount/100), or from CP via profits: SP = CP × (1 ± Profit/Loss/100).

Q42. Answer: (a) 14.06

Shortcut Trick

The square root of a decimal has exactly half the number of decimal places as the original number.

√256 = 16

√0.0256 = 0.16 (4 decimal places → 2 decimal places)

√4.41 = 2.1 (2 decimal places → 1 decimal place)

Expression = 16 + 0.16 − 2.1 = 16.16 − 2.10 = 14.06

Therefore The correct answer is 14.06.

Alternate Method

Given:

Expression = √256 + √0.0256 − √4.41

Calculations:

=> Expression = √256 + √(256 / 10000) − √(441 / 100)

=> Expression = 16 + (16 / 100) − (21 / 10)

=> Expression = 16 + 0.16 − 2.1

=> Expression = 16.16 − 2.10

=> Expression = 14.06

Therefore The correct answer is 14.06.

Additional Information

Square Roots of Decimals

When extracting the square root of a perfect square decimal number, count the total decimal places. The square root will contain exactly half as many decimal places. For example, √0.0064 has 4 decimal places, so its root is 0.08 with 2 decimal places.

Fractional Conversion Method

Decimals can be easily converted to fractions with denominators of 10, 100, 1000 etc. to avoid errors during calculation. Example: √4.41 = √(441 / 100) = 21 / 10 = 2.1.

BODMAS Rule

In any simplification, operations must be strictly performed in the sequential order of Brackets, Orders (Roots/Indices), Division, Multiplication, Addition, and finally Subtraction.

Q43. Answer: (c) 7048048

Shortcut Trick

For a number to be divisible by 14, it must be perfectly divisible by both 2 and 7.

Eliminate Option 2 (6436639) immediately as it is an odd number and not divisible by 2.

Check the remaining even options for divisibility by 7 directly.

For Option 3: 7048048 ÷ 7 = 1006864 (Exact division, remainder is 0).

Since 7048048 is divisible by both 2 and 7, it is exactly divisible by 14.

Therefore The correct answer is 7048048.

Alternate Method

Given:

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Numbers to be checked: 6794266, 6436639, 7048048, 7132968

Concept Used:

A number is divisible by a composite number if it is divisible by all its co-prime factors.

The co-prime factors of 14 are 2 and 7 (Since 2 × 7 = 14 and their HCF is 1).

Calculations:

=> Divisibility by 2: The unit digit must be an even number (0, 2, 4, 6, 8).

=> 6436639 ends in 9, so it is not divisible by 2. This option is eliminated.

=> Divisibility by 7: Divide the remaining numbers by 7 to check for a zero remainder.

=> Option 1: 6794266 ÷ 7 = 970609 with a remainder of 3. (Not divisible)

=> Option 3: 7048048 ÷ 7 = 1006864 with a remainder of 0. (Divisible)

=> Option 4: 7132968 ÷ 7 = 1018995 with a remainder of 3. (Not divisible)

=> Only 7048048 satisfies the divisibility rules for both 2 and 7.

Therefore The correct answer is 7048048.

Additional Information

Composite Divisibility

To test divisibility by composite numbers like 12, 14, 15, or 72, break the number into co-prime factors and test for each factor individually (e.g., for 72 check divisibility by both 8 and 9).

Divisibility Rule of 7

Remove the last digit, double it, and subtract it from the remaining truncated number. If the result is 0 or divisible by 7, the original number is too.

Divisibility Rule of 11

Find the sum of digits at odd places and the sum of digits at even places. If their difference is 0 or perfectly divisible by 11, the number is divisible by 11.

Divisibility Rule of 13

Remove the last digit, multiply it by 4, and add it to the remaining truncated number. If the result is divisible by 13, the original number is divisible by 13.

Q44. Answer: (c) Rs. 9,040

Shortcut Trick

Salman's profit = 16000 − 6400 = Rs. 9600

Profit ratio (Vivek : Salman) = 6400 : 9600 = 2 : 3

Since time is equal, Investment ratio = Profit ratio = 2 : 3

Total investment = 5 parts = Rs. 45,200

Difference = 1 part = 45200 ÷ 5 = Rs. 9,040

Therefore The correct answer is Rs. 9,040.

Alternate Method

Given:

Total Investment = Rs. 45,200

Total Profit = Rs. 16,000

Vivek's Profit = Rs. 6,400

Formula Used:

Profit Ratio = Investment Ratio × Time Ratio

When time periods are equal, Profit Ratio = Investment Ratio

Profit Ratio = Investment Ratio (Same Time Period)

Vivek Profit: Rs. 6400

Salman Profit: Rs. 9600

Total Investment = Rs. 45,200 (5 parts)

Investment: 2 parts

Investment: 3 parts

Diff = 1 part

1 part = Rs. 45,200 ÷ 5 = Rs. 9,040

Calculations:

=> Salman's Profit = Total Profit − Vivek's Profit

=> Salman's Profit = 16000 − 6400 = Rs. 9,600

=> Ratio of Vivek's Profit to Salman's Profit = 6400 : 9600 = 2 : 3

=> Since their time periods are the same, the ratio of their investments is equal to the ratio of their profits.

=> Vivek's Investment : Salman's Investment = 2 : 3

=> Let Vivek's investment be 2x and Salman's investment be 3x.

=> Total Investment = 2x + 3x = 5x

=> 5x = 45200

=> x = 45200 ÷ 5 = 9040

=> Difference in their investments = 3x − 2x = x

=> Difference = Rs. 9,040

Therefore The correct answer is Rs. 9,040.

Additional Information

Compound Partnership

When partners invest their capital for different time periods, their profit is divided in the ratio of the product of their capital and respective time periods (C1 × T1 : C2 × T2).

Sleeping Partner

A partner who only invests money but does not actively manage the business. Their share of profit is strictly based on the capital invested and the time period.

Joining Mid-way

If a partner joins the business after a few months, their time period of investment is calculated only for the remaining duration until the end of the partnership term.

Q45. Answer: (a) 8,976

Shortcut Trick

When Simple Interests from two investments are equal for the same time period, their principals are inversely proportional to their rates.

Ratio of Principals P1 : P2 = R2 : R1 = 11 : 14

Total ratio parts = 11 + 14 = 25 parts.

Value of 25 parts = Rs. 20,400 => 1 part = Rs. 816.

Sum invested at 14% (11 parts) = 11 × 816 = 8976.

Therefore The correct answer is Rs. 8,976.

Alternate Method

Given:

Total Principal = Rs. 20,400

Rate 1 (R1) = 14% p.a., Time 1 (T1) = 9 years

Rate 2 (R2) = 11% p.a., Time 2 (T2) = 9 years

Formula Used:

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

Total Sum = Rs. 20,400

Part 1 at 14%

Time = 9 years

Part 2 at 11%

Time = 9 years

SI1 = SI2

Ratio Part 1 : Part 2 = 11 : 14

Calculation:

Let the sum invested at 14% be P1 and at 11% be P2.

=> SI1 = (P1 × 14 × 9) ÷ 100

=> SI2 = (P2 × 11 × 9) ÷ 100

According to the question, equal interest is earned:

=> (P1 × 14 × 9) ÷ 100 = (P2 × 11 × 9) ÷ 100

Cancelling 9 and 100 from both sides:

=> P1 × 14 = P2 × 11

=> P1 / P2 = 11 / 14

=> Total parts = 11 + 14 = 25 parts

=> 25 parts = 20,400

=> 1 part = 20,400 ÷ 25 = 816

=> P1 (sum at 14%) = 11 parts = 11 × 816 = 8,976

Therefore The correct answer is Rs. 8,976.

Additional Information

When Simple Interests are Equal

If a certain sum is divided into multiple parts such that their Simple Interests are equal, the ratio of their principals is P1 : P2 : P3 = 1/(R1T1) : 1/(R2T2) : 1/(R3T3).

When Amounts are Equal

If a certain sum is divided into parts such that their Amounts (Principal + SI) are equal, the ratio of their principals is P1 : P2 : P3 = 1/(100 + R1T1) : 1/(100 + R2T2) : 1/(100 + R3T3).

Difference between SI and CI

For 2 years: Difference = P × (R ÷ 100)². Simple Interest is calculated only on the initial principal, whereas Compound Interest is calculated on the previously accumulated amount as well.

Q46. Answer: (c) 26^(-34)

Shortcut Trick

For operations involving the same base, combine the exponents directly using the laws of indices from left to right.

Division translates to subtraction of powers, and multiplication translates to addition of powers.

Power of 26 = −19 − 18 + 3

=> Power = −37 + 3 = −34

Therefore The correct answer is 26^(−34).

Alternate Method

Given:

Expression: 26^(−19) ÷ 26^(18) × 26³

Formula Used:

Law of Division: a^m ÷ aⁿ = a^(m−n)

Law of Multiplication: a^m × aⁿ = a^(m+n)

Calculation:

According to the BODMAS rule, division and multiplication share the same priority. Therefore, we evaluate them sequentially from left to right.

=> (26^(−19) ÷ 26^(18)) × 26³

=> 26^((−19 − 18)) × 26³

=> 26^(−37) × 26³

=> 26^((−37 + 3))

=> 26^(−34)

Therefore The correct answer is 26^(−34).

Additional Information

BODMAS Rule

When an expression contains both division and multiplication, they have the same priority level. We must evaluate the operations consecutively from left to right to get the correct mathematical result.

Laws of Exponents

Power of a Power: (a^m)ⁿ = a^(m×n)

Zero Exponent: a^0 = 1 (where a is any non-zero number)

Negative Exponent Rule

A negative exponent indicates taking the reciprocal of the base raised to a positive exponent: a^(−n) = 1 ÷ aⁿ.

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Q47. Answer: (d) 196 π cm2

Shortcut Trick

The surface area of a sphere directly in terms of diameter (d) is given by Area = πd².

Given, d = 14 cm.

Area = π × (14)²

Area = 196π cm²

Therefore The correct answer is 196π cm².

Alternate Method

r = 7 cm

Diameter (d) = 14 cm

Given:

Diameter of the sphere (d) = 14 cm

Formula:

Radius (r) = d ÷ 2

Surface area of a sphere = 4πr²

Calculation:

=> Radius (r) = 14 ÷ 2 = 7 cm

=> Surface Area = 4 × π × (7)²

=> Surface Area = 4 × π × 49

=> Surface Area = 196π cm²

Therefore The correct answer is 196π cm².

Additional Information

Volume of a Sphere

The total 3D space enclosed by a sphere is given by V = (4÷3)πr³, where r is the radius.

Hemisphere Properties

A hemisphere is exactly half of a sphere. Its volume is exactly half of the sphere's volume, V = (2÷3)πr³.

Surface Areas of a Hemisphere

Curved Surface Area (CSA) = 2πr². Total Surface Area (TSA) = 3πr² (since it includes the flat circular base area of πr²).

Q48. Answer: (b) 26.75

Shortcut Trick

Use percentage swap trick: 65% of 75 = 75% of 65 = (3/4) × 65 = 48.75.

Direct fraction calculation: 2/5 of 55 = 2 × 11 = 22.

Required difference = 48.75 − 22 = 26.75.

Therefore The correct answer is 26.75.

Alternate Method

Given:

First value = 65% of 75

Second value = 2/5 of 55

65% of 75 = 48.75

2/5 of 55 = 22

Difference = 26.75

Calculations:

=> First value = (65 / 100) × 75

=> First value = 0.65 × 75 = 48.75

=> Second value = (2 / 5) × 55

=> Second value = 2 × 11 = 22

=> Difference = 48.75 − 22

=> Difference = 26.75

Therefore The correct answer is 26.75.

Additional Information

Percentage Interchangeability

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x% of y is mathematically equal to y% of x. For example, 65% of 75 is the exact same as 75% of 65. Since 75% translates to a standard fraction (3/4), utilizing this swap makes mental calculation much easier.

Fraction of a Number

To find a fraction a/b of a number N, first divide N by the denominator b to find the value of one part, then multiply the result by the numerator a. Example: 2/5 of 55 → 55 ÷ 5 = 11, then 11 × 2 = 22.

BODMAS Rule for Expressions

The word 'of' mathematically behaves like multiplication but holds higher precedence than division in the standard BODMAS hierarchy. It must be resolved entirely before any regular division or multiplication operators in an equation.

Q49. Answer: (d) 145°

Shortcut Trick

In right-angled triangle BDC, angle C = 90° − angle DBC = 90° − 25° = 65°.

By the Exterior Angle Theorem in triangle AEC, the exterior angle at E is equal to the sum of the two opposite interior angles.

=> angle AEB = angle CAE + angle C

=> angle AEB = 80° + 65° = 145°.

Therefore The correct answer is 145°.

Alternate Method

Given:

BD perpendicular to AC at D, so angle BDC = 90°

angle DBC = 25°

angle CAE = 80°

A

B

C

D

E

25°

65°

80°

145°

Step 1: Find angle C in triangle BDC

The sum of angles in a triangle is 180°.

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

=> 90° + 25° + angle C = 180°

=> 115° + angle C = 180°

=> angle C = 180° − 115° = 65°

Step 2: Find angle AEC in triangle AEC

The sum of angles in triangle AEC is 180°.

=> angle CAE + angle C + angle AEC = 180°

=> 80° + 65° + angle AEC = 180°

=> 145° + angle AEC = 180°

=> angle AEC = 180° − 145° = 35°

Step 3: Find angle AEB

Since points B, E, and C lie on a continuous straight line segment BC, angle AEB and angle AEC are supplementary.

=> angle AEB + angle AEC = 180°

=> angle AEB + 35° = 180°

=> angle AEB = 180° − 35° = 145°

Therefore The correct answer is 145°.

Additional Information

Exterior Angle Theorem

The measure of an exterior angle of a triangle is equal to the sum of the measures of its two remote interior angles. It offers a direct shortcut for deducing an angle without finding the third interior angle first.

Angle Sum Property

The sum of all interior angles in any planar triangle is always strictly equal to 180°.

Linear Pair Axiom

When two adjacent angles form a straight line, their sum is equal to 180°. These angles are termed as supplementary angles.

Q50. Answer: (a) 29

Shortcut Trick

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

We know that $28^2 = 784$ and $29^2 = 841$.

Since 812 lies between 784 and 841, the two consecutive numbers must be 28 and 29.

The greater of the two numbers is 29.

Therefore The correct answer is 29.

Alternate Method

Given:

Product of two consecutive positive natural numbers = 812

Formula Used:

If x is the smaller number, the next consecutive number is (x + 1).

Calculations:

$\Rightarrow x \times (x + 1) = 812$

$\Rightarrow x^2 + x - 812 = 0$

$\Rightarrow x^2 + 29x - 28x - 812 = 0$

$\Rightarrow x(x + 29) - 28(x + 29) = 0$

$\Rightarrow (x - 28)(x + 29) = 0$

$\Rightarrow x = 28$ or $x = -29$

Since the numbers are positive natural numbers, we take x = 28.

The greater number = x + 1 = 28 + 1 = 29.

Therefore The correct answer is 29.

Additional Information

Consecutive Numbers

Numbers that follow each other continuously in the order from smallest to largest. For integers, they are represented as n, n+1, n+2, etc.

Product of Consecutive Integers

The product of any two consecutive integers is always an even number, because one of the two numbers is always a multiple of 2.

Quadratic Roots Formula

For a quadratic equation $ax^2 + bx + c = 0$, the roots can be calculated using the formula: $x = [-b \pm \sqrt{(b^2 - 4ac)}] \div 2a$.

Q51. Answer: (b) Rs. 10.60

Shortcut Trick

Total CP of all bulbs = Rs. 93.

Number of good bulbs remaining = 93 − 19 = 74.

Total SP of remaining bulbs = 74 × Rs. 1.40 = Rs. 103.60.

Profit = Total SP − Total CP = 103.60 − 93 = Rs. 10.60.

Therefore The correct answer is Rs. 10.60.

Alternate Method

Given:

Total bulbs purchased = 93

Total Cost Price (CP) = Rs. 93

Number of broken bulbs in transit = 19

Selling Price (SP) of one remaining bulb = Rs. 1.40

Formula Used:

Profit = Total Selling Price − Total Cost Price

Total CP = Rs. 93

CP Portion = Rs. 93

Profit = Rs. 10.60

74 bulbs × Rs. 1.40 = Rs. 103.60 (Total SP)

Total SP = Rs. 103.60

Calculation:

=> Number of remaining good bulbs = 93 − 19 = 74

=> Total Selling Price = 74 × 1.40

=> Total SP = Rs. 103.60

=> Profit = Total SP − Total CP

=> Profit = 103.60 − 93 = 10.60

Therefore The correct answer is Rs. 10.60.

Additional Information

Profit and Loss Basics

Profit occurs when the Selling Price (SP) is strictly greater than the Cost Price (CP). Profit = SP − CP.

Loss Scenario

If the total revenue from selling the remaining items is less than the total cost price due to damage or low rates, a loss is incurred. Loss = CP − SP.

Profit / Loss Percentage

Profit or Loss percentage is always evaluated on the total investment or Cost Price unless stated otherwise: Profit % = (Profit ÷ CP) × 100.

Q52. Answer: (d) 24

Shortcut Trick

Other Number = (HCF × LCM) ÷ Given Number

=> Other Number = (6 × 264) ÷ 66

=> Other Number = 6 × 4

=> Other Number = 24

Therefore The correct answer is 24.

Alternate Method

Given:

HCF = 6

LCM = 264

First Number (N1) = 66

Formula Used:

Product of two numbers = HCF × LCM

=> N1 × N2 = HCF × LCM

N1 = 66

N2 = ?

×

=

HCF = 6

LCM = 264

×

Calculations:

=> 66 × N2 = 6 × 264

=> N2 = (6 × 264) ÷ 66

=> N2 = 1584 ÷ 66

=> N2 = 24

Therefore The correct answer is 24.

Additional Information

Co-prime Numbers

Two numbers are co-prime if their HCF is 1. The LCM of two co-prime numbers is always equal to their product.

HCF and LCM of Fractions

HCF = (HCF of Numerators) ÷ (LCM of Denominators)

LCM = (LCM of Numerators) ÷ (HCF of Denominators)

Relation between HCF and LCM

The HCF of two or more numbers is always a factor of their LCM. That means the LCM is completely divisible by the HCF.

Q53. Answer: (c) Rs. 20,748

Shortcut Trick

SI is directly proportional to Rate × Time.

Effective rate 1 = 6.8 × (60/7) = 408/7%

Effective rate 2 = 9.7 × (20/3) = 194/3%

Principal = (7344 × 100) ÷ (408/7) = Rs. 12,600

Amount = 12600 × (100% + 194/3%) = 126 × (494/3) = Rs. 20,748

Therefore The correct answer is Rs. 20,748.

Alternate Method

Given:

Simple Interest (SI1) = Rs. 7,344

Time (T1) = 8 ^4/7 years = 60/7 years

Rate (R1) = 6.8% per annum

Rate (R2) = 9.7% per annum

Time (T2) = 6 ²/3 years = 20/3 years

Formula Used:

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

Amount = P + SI

Principal = Rs. 12,600

Case 1

R = 6.8%, T = 60/7 yrs

SI = Rs. 7,344

Case 2

R = 9.7%, T = 20/3 yrs

SI = Rs. 8,148

Amount = Rs. 20,748

Calculations:

=> 7344 = (P × 6.8 × (60/7)) ÷ 100

=> 7344 = (P × 408) ÷ 700

=> P = (7344 × 700) ÷ 408

=> P = 18 × 700 = Rs. 12,600

Now, calculating SI for the second case:

=> SI2 = (P × R2 × T2) ÷ 100

=> SI2 = (12600 × 9.7 × (20/3)) ÷ 100

=> SI2 = 126 × 9.7 × (20/3)

=> SI2 = 42 × 9.7 × 20

=> SI2 = 840 × 9.7 = Rs. 8,148

Finding the Amount payable:

=> Amount = P + SI2

=> Amount = 12600 + 8148 = Rs. 20,748

Therefore The correct answer is Rs. 20,748.

Additional Information

Compound Interest (CI) Formula

When interest is calculated on the initial principal and the accumulated interest of previous periods, Amount A = P × (1 + R/100)^T.

SI vs CI Difference (for 2 years)

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The difference between compound interest and simple interest on a certain sum for exactly 2 years is given by: Difference = P × (R/100)².

Rule of 72

A mathematical rule of thumb to estimate the number of years required to double your money at a given annual compound interest rate (R). Approximate Time ≈ 72 ÷ R.

Q54. Answer: (b) 289/110

Shortcut Trick

Simplify the inner fractional term first: 1 + 3/8 = 11/8.

The reciprocal of 11/8 is 8/11.

The given expression simplifies to: 5/2 + 8/11 − 3/5.

Taking the LCM of 2, 11, and 5 as 110, the numerator becomes: (5 × 55) + (8 × 10) − (3 × 22).

Simplifying further: (275 + 80 − 66) / 110 = 289 / 110.

Therefore The correct answer is 289/110.

Alternate Method

Given:

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

Calculations:

=> First, we will simplify the term inside the bracket.

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

=> Dividing 1 by this fraction gives its reciprocal.

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

=> Now, substitute this back into the original expression:

=> 5/2 + 8/11 − 3/5

=> To evaluate this, find the Least Common Multiple (LCM) of the denominators 2, 11, and 5.

=> LCM(2, 11, 5) = 110

=> Convert each fraction to an equivalent fraction with 110 as the denominator:

=> (5 × 55)/110 + (8 × 10)/110 − (3 × 22)/110

=> 275/110 + 80/110 − 66/110

=> (275 + 80 − 66) / 110

=> (355 − 66) / 110

=> 289 / 110

Therefore The correct answer is 289/110.

Additional Information

BODMAS Rule

It defines the exact sequence of steps to evaluate mathematical expressions: Brackets, Orders (powers/roots), Division, Multiplication, Addition, and Subtraction.

Fraction Addition & Subtraction

To add or subtract unlike fractions, find the LCM of their denominators, convert them to equivalent fractions, and then process the numerators while keeping the common denominator.

Reciprocal of a Fraction

The reciprocal of any fraction a/b is b/a. When 1 is divided by a proper or improper fraction, the result is exactly its reciprocal.

Q55. Answer: (c) 36 km/hr

Shortcut Trick

When distance is constant, speed is inversely proportional to time.

Time ratio (T1 : T2) = 9 : 12 = 3 : 4

Speed ratio (S1 : S2) = 4 : 3

Given 4 units → 48 km/hr

New speed (3 units) → 12 × 3 = 36 km/hr

Therefore The correct answer is 36 km/hr.

Alternate Method

Given:

Initial speed (S1) = 48 km/hr

Initial time (T1) = 9 hours

New time (T2) = 12 hours

Formula Used:

Distance = Speed × Time

New Speed = Distance ÷ New Time

Case 1: S = 48 km/hr, T = 9 hours

Case 2: S = ?, T = 12 hours

Distance is Constant

Calculations:

=> Total Distance = S1 × T1

=> Total Distance = 48 × 9 = 432 km

=> New Speed (S2) = Distance ÷ T2

=> S2 = 432 ÷ 12

=> S2 = 36 km/hr

Therefore The correct answer is 36 km/hr.

Additional Information

Average Speed

Average Speed = Total Distance ÷ Total Time. If equal distances are covered at speeds a and b, the average speed becomes 2ab ÷ (a + b).

Relative Speed

When moving in the same direction, Relative Speed = |a − b|. When moving in opposite directions, Relative Speed = a + b.

Proportionality in Speed, Distance and Time

When Distance is constant, Speed is inversely proportional to Time (S prop. to 1 / T). When Time is constant, Distance is directly proportional to Speed (D prop. to S).

Q56. Answer: (b) 15

Shortcut Trick

Let M and D be Mary's and Dia's present ages.

M − 7D = 9 => 2M − 14D = 18 ... (i)

2M − 5D = 27 ... (ii)

Subtracting (i) from (ii): 9D = 9 => D = 1

M = 7(1) + 9 = 16 => Difference = 16 − 1 = 15

Therefore The correct answer is 15 years.

Alternate Method

Given:

2 times Mary's age is 27 more than 5 times Dia's age.

7 times Dia's age is 9 less than Mary's age.

Mary

16 years

Dia

1 year

Difference = 15 years

Calculations:

Let Mary's present age be M and Dia's present age be D.

=> 2M = 5D + 27 ... (Equation 1)

=> 7D = M − 9

=> M = 7D + 9 ... (Equation 2)

Substitute Equation 2 into Equation 1:

=> 2(7D + 9) = 5D + 27

=> 14D + 18 = 5D + 27

=> 14D − 5D = 27 − 18

=> 9D = 9

=> D = 1

Substitute the value of D in Equation 2:

=> M = 7(1) + 9

=> M = 16

Difference between their ages = M − D

=> 16 − 1 = 15

Therefore The correct answer is 15 years.

Additional Information

Linear Equations in Two Variables

A system of two linear equations can be solved using substitution or elimination methods to logically find the unique values of two unknown variables.

Problems on Ages

If the present age is assumed as x, then the age 'n' years ago is evaluated as (x − n) and the age 'n' years hence will be evaluated as (x + n).

Difference Between Ages

The age difference between two individuals always remains strictly constant throughout their lifetime, regardless of the number of years passed.

Q57. Answer: (b) 43.89

Shortcut Trick

Total Distance = 294 + 210 + 330 = 834 km

Total Time = (294 ÷ 42) + (210 ÷ 30) + (330 ÷ 66) = 7 + 7 + 5 = 19 hr

Average Speed = Total Distance ÷ Total Time

Average Speed = 834 ÷ 19 ≈ 43.89 km/hr

Therefore The correct answer is 43.89 km/hr.

Alternate Method

Given:

Distance D1 = 294 km, Speed S1 = 42 km/hr

Distance D2 = 210 km, Speed S2 = 30 km/hr

Distance D3 = 330 km, Speed S3 = 66 km/hr

D = 294 km

D = 210 km

D = 330 km

S = 42 km/hr

S = 30 km/hr

S = 66 km/hr

T = 7 hr

T = 7 hr

T = 5 hr

Total = 834 km in 19 hr

Formula Used:

Time = Distance ÷ Speed

Average Speed = Total Distance ÷ Total Time

Calculations:

=> T1 = 294 ÷ 42 = 7 hr

=> T2 = 210 ÷ 30 = 7 hr

=> T3 = 330 ÷ 66 = 5 hr

=> Total Time = 7 + 7 + 5 = 19 hr

=> Total Distance = 294 + 210 + 330 = 834 km

=> Average Speed = 834 ÷ 19 = 43.8947... km/hr

=> Average Speed ≈ 43.89 km/hr

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Therefore The correct answer is 43.89 km/hr.

Additional Information

Average Speed (Different Distances)

It is the ratio of the total distance covered to the total time taken. Formula: Avg Speed = (D1 + D2 + ...) ÷ (T1 + T2 + ...)

Average Speed (Equal Distances)

If a person covers two equal halves of a journey at speeds x and y, the average speed is (2xy) ÷ (x + y). For three equal parts at speeds x, y, and z, it is (3xyz) ÷ (xy + yz + zx).

Relative Speed

When two bodies move in the same direction, their relative speed is S1 − S2. When moving in opposite directions, it is S1 + S2.

Q58. Answer: (d) Rs. 303

Shortcut Trick

When the investment time is equal, Profit Ratio = Capital Ratio.

Ratio of Profit = 1370 : 1500 : 1230 = 137 : 150 : 123

Total ratio parts = 137 + 150 + 123 = 410 parts

Simran's profit share = (123 ÷ 410) × 1010

Simran's profit share = 3 × 101 = Rs. 303

Therefore The correct answer is Rs. 303.

Alternate Method

Given:

Priya's investment = Rs. 1370

Deepak's investment = Rs. 1500

Simran's investment = Rs. 1230

Total profit at the end of the year = Rs. 1010

Formula Used:

When the time of investment is the same for all partners, the profit is distributed in proportion to their initial capital investments.

Capital Investment and Profit Ratio

Priya

Rs. 1370 (137 parts)

Deepak

Rs. 1500 (150 parts)

Simran

Rs. 1230 (123 parts)

Total Profit

Rs. 1010

Calculations:

=> Profit Ratio (Priya : Deepak : Simran) = 1370 : 1500 : 1230

=> Simplified Profit Ratio = 137 : 150 : 123

=> Sum of the profit ratios = 137 + 150 + 123 = 410 units

=> Simran's share = (Simran's ratio ÷ Total ratio) × Total profit

=> Simran's share = (123 ÷ 410) × 1010

=> Simran's share = 123 × (1010 ÷ 410)

=> Simran's share = 123 × (101 ÷ 41)

=> Simran's share = 3 × 101 = 303

Therefore The correct answer is Rs. 303.

Additional Information

Partnership Profit Ratio

Profit ratio is basically calculated as the product of the capital invested and the respective time period of investment. (P1 : P2 = C1×T1 : C2×T2)

Active and Sleeping Partners

An active partner actively works to manage the business and receives a fixed salary or a specific percentage of profit as management fee. The remaining profit is distributed according to invested capitals. A sleeping partner only invests capital.

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Joining Mid-way

If a partner joins the business after 'n' months in a 1-year operational business, their investment time period is considered as (12 − n) months while evaluating their profit share.

Q59. Answer: (a) 3500

Shortcut Trick

Let Cost Price (CP) = 100 units => List Price (MP) = 125 units.

Selling Price (SP) after 16% discount = 125 × 0.84 = 105 units.

Profit = SP − CP = 105 − 100 = 5 units.

Given, 5 units = Rs. 140 => 1 unit = Rs. 28.

List Price (MP) = 125 × 28 = 3500.

Therefore The correct answer is Rs. 3500.

Alternate Method

Given:

Markup Percentage = 25%

Discount Percentage = 16%

Profit = Rs. 140

CP = 100u

SP = 105u

MP = 125u

Markup: +25%

Discount

−16%

Profit = 5u = Rs. 140

Calculations:

=> Let the Cost Price (CP) be 100 units.

=> List Price (MP) = CP + 25% of CP = 100 + 25 = 125 units.

=> Discount is always calculated on the List Price.

=> Selling Price (SP) = MP − Discount

=> SP = 125 − (16% of 125)

=> SP = 125 − 20 = 105 units.

=> Profit = SP − CP = 105 − 100 = 5 units.

=> According to the question, Profit = Rs. 140

=> 5 units = 140

=> 1 unit = 140 ÷ 5 = 28

=> List Price (MP) = 125 units = 125 × 28 = 3500.

Therefore The correct answer is Rs. 3500.

Additional Information

Marked Price and Discount

Discount is always calculated on the Marked Price (or List Price) of an article. The Selling Price is derived as: SP = MP × (1 − Discount%).

Profit and Loss Calculation

Profit and Loss percentages are always computed on the Cost Price (CP). Profit = SP − CP, and Profit% = (Profit ÷ CP) × 100.

Direct Relation Formula

The relationship between Cost Price and Marked Price can be directly established using the effective formula: CP ÷ MP = (100 − Discount%) ÷ (100 + Profit%).

Q60. Answer: (d) 8

Shortcut Trick

Since the order of successive discounts does not change the final price, calculate the 10% discount first.

Intermediate Price after 10% discount = 39250 − (10% of 39250) = 39250 − 3925 = Rs. 35,325

The second discount reduces the price from Rs. 35,325 to Rs. 32,499.

Discount amount = 35325 − 32499 = Rs. 2,826

Second discount x = (2826 ÷ 35325) × 100 = 8%

Therefore The correct answer is 8%.

Alternate Method

Given:

Marked Price (MP) = Rs. 39,250

Selling Price (SP) = Rs. 32,499

Successive discounts = x% and 10%

Formula Used:

SP = MP × (1 − x/100) × (1 − 10/100)

Marked Price

Rs. 39,250

−10%

New Price

Rs. 35,325

−x%

Selling Price

Rs. 32,499

Discount % = (35325 − 32499) ÷ 35325 × 100 = 8%

Calculations:

=> 32499 = 39250 × (1 − x/100) × (1 − 10/100)

=> 32499 = 39250 × (1 − x/100) × (90/100)

=> 32499 = 35325 × (1 − x/100)

=> 32499 ÷ 35325 = 1 − x/100

=> 0.92 = 1 − x/100

=> x/100 = 1 − 0.92 = 0.08

=> x = 0.08 × 100 = 8

Therefore The correct answer is 8%.

Additional Information

Successive Discounts Formula

When two successive discounts of a% and b% are applied, the equivalent single discount is given by: (a + b − ab/100)%.

Marked Price vs Cost Price Relation

The relationship linking Marked Price (MP), Cost Price (CP), Profit % (P) and Discount % (D) is: MP/CP = (100 + P) ÷ (100 − D).

Effective Multiplier Concept

The final Selling Price after any number of successive discounts can be found using multipliers directly: SP = MP × (100 − d1)/100 × (100 − d2)/100.

Q61. Answer: (d) 62%

Shortcut Trick

According to the rule of weighted averages, Total % = (Male % × Male Pop + Female % × Female Pop) ÷ Total Pop

If the overall percentage of a population exactly matches the percentage of one of its sub-groups, the remaining sub-group must also share that exact same percentage to maintain the overall average.

Since both the total population and the male population have a literacy rate of exactly 62%, the female literacy rate must also inherently be 62%.

Therefore The correct answer is 62%.

Alternate Method

Given:

Total Population = 368000

Male Population = 220000

Total Literate = 62%

Literate Males = 62%

Total Pop: 368,000

Literate: 62%

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Males: 220,000

Literate: 62%

Females: 148,000

Literate: ? %

Since Total % = Male %, Female % must be 62%

Calculations:

=> Female population = Total Population − Male Population

=> Female population = 368000 − 220000 = 148000

=> Number of total literate people = 62% of 368000

=> Number of literate males = 62% of 220000

=> Number of literate females = Total literate − Literate males

=> Literate females = (62% of 368000) − (62% of 220000)

=> Literate females = 62% × (368000 − 220000)

=> Literate females = 62% of 148000

=> Percentage of literate females = (Literate females ÷ Female population) × 100

=> Percentage of literate females = [(62% of 148000) ÷ 148000] × 100

=> Percentage of literate females = 62%

Therefore The correct answer is 62%.

Additional Information

Weighted Average Rule

When a population is divided into distinct subgroups, the total percentage is the weighted average of the sub-group percentages: Overall % = (n1x1 + n2x2) ÷ (n1 + n2).

Constant Percentage Property

If the overall percentage of a mixture or group matches the percentage of one of its components exactly, all other components must inherently have that exact same percentage.

Base Independence

In questions where sub-group percentages are perfectly equal to the total group percentage, actual population or quantity numbers become redundant and do not impact the final percentage value.

Q62. Answer: (b) 4 : 1

Shortcut Trick

Convert the percentage to a fraction: 20% = 1/5.

Equate the parts: (1/5) × First Number = (4/5) × Second Number.

The denominators (5) cancel out directly from both sides.

First Number = 4 × Second Number.

Ratio of First Number to Second Number = 4 : 1.

Therefore The correct answer is 4 : 1.

Alternate Method

20% of 1st

=

4/5 of 2nd

1/5 × 1st = 4/5 × 2nd

Ratio = 4 : 1

Given:

20% of the first number is equal to four-fifths of the second number.

Calculations:

Let the first number be x and the second number be y.

=> 20% of x = (4/5) of y

=> (20/100) × x = (4/5) × y

=> (1/5) × x = (4/5) × y

Multiplying both sides by 5 to eliminate the fractions:

=> x = 4 × y

To find the ratio of the first number to the second, rearrange the equation:

=> x/y = 4/1

=> x : y = 4 : 1

Therefore The correct answer is 4 : 1.

Additional Information

Ratio & Proportion

A ratio compares two quantities by division, expressed as a : b. A proportion is an equation stating that two ratios are equivalent to each other.

Percentage to Fraction Conversion

Percentages can be directly converted into standard fractions by dividing by 100. For example, 20% = 20/100 = 1/5. Memorizing base fractional values significantly reduces calculation time.

Cross Multiplication Rule

When two fractions are proportional (a/b = c/d), applying cross multiplication yields a × d = b × c. When denominators are identical on both sides of an equation, they can be directly cancelled out.

Q63. Answer: (b) 55,440

Shortcut Trick

The relation between Volume (V), Curved Surface Area (CSA), and radius (r) of a cylinder is directly given by the formula:

Volume = (CSA × r) ÷ 2

=> Volume = (5280 × 21) ÷ 2

=> Volume = 2640 × 21

=> Volume = 55440

Therefore The correct answer is 55,440 cm^3.

Alternate Method

Given:

Curved Surface Area (CSA) = 5280 cm^2

Radius (r) = 21 cm

Formulas Used:

CSA = $2\pi rh$

Volume = $\pi r^2 h$

r = 21 cm

h = ?

Curved Surface Area = 5280 sq cm

Calculations:

=> 2 × (22 ÷ 7) × 21 × h = 5280

=> 2 × 22 × 3 × h = 5280

=> 132 × h = 5280

=> h = 5280 ÷ 132 = 40 cm

Now, substitute the value of h to find the volume:

=> Volume = π × r^2 × h

=> Volume = (22 ÷ 7) × 21 × 21 × 40

=> Volume = 22 × 3 × 21 × 40

=> Volume = 66 × 840

=> Volume = 55440 cm^3

Therefore The correct answer is 55,440 cm^3.

Additional Information

Total Surface Area of a Cylinder

The TSA of a solid cylinder includes the curved surface area plus the area of the two circular bases. Formula: TSA = $2\pi r(r + h)$.

Volume of a Cone

A cone with the same base radius and height as a cylinder has exactly one-third of the cylinder's volume. Formula: V = $(1 \div 3)\pi r^2 h$.

Hollow Cylinder

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For a hollow tube with outer radius R and inner radius r, the volume of material used is given by $V = \pi h(R^2 - r^2)$.

Q64. Answer: (c) -1

Shortcut Trick

Put $\theta = 45°$ to quickly evaluate the expression.

=> $\sec 45° = \sqrt{2}$, $\sin 45° = 1/\sqrt{2}$, $\cos 45° = 1/\sqrt{2}$

=> $(1 - \sec^2 45°) \div \sin^2 45° \times \cos^2 45°$

=> $(1 - 2) \div (1/2) \times (1/2)$

=> $-1 \times 2 \times (1/2) = -1$

Therefore The correct answer is -1.

Alternate Method

Given:

$[(1 - \sec^2\theta) / \sin^2\theta] \times \cos^2\theta$

Formula Used:

$\sec^2\theta - \tan^2\theta = 1$

$\tan\theta = \sin\theta / \cos\theta$

Calculation:

=> $[(1 - \sec^2\theta) / \sin^2\theta] \times \cos^2\theta$

=> $[-\tan^2\theta / \sin^2\theta] \times \cos^2\theta$

=> $[(-\sin^2\theta / \cos^2\theta) / \sin^2\theta] \times \cos^2\theta$

=> $(-1 / \cos^2\theta) \times \cos^2\theta$

=> -1

Therefore The correct answer is -1.

Additional Information

Trigonometric Identities

$\sin^2\theta + \cos^2\theta = 1$ | $\sec^2\theta - \tan^2\theta = 1$ | $\text{cosec}^2\theta - \cot^2\theta = 1$

Reciprocal Relations

$\sin\theta = 1 / \text{cosec}\theta$ | $\cos\theta = 1 / \sec\theta$ | $\tan\theta = 1 / \cot\theta$

Value Substitution Method

For expressions independent of θ, substituting standard values like 30°, 45°, or 60° gives the answer quickly without solving algebraically.

Q65. Answer: (a) 412/25 hours

Shortcut Trick

Use the LCM method to quickly find the total capacity and combined efficiency.

Total Capacity (LCM of 16, 28, and 8) = 112 units.

Combined Efficiency = (112 ÷ 16) + (112 ÷ 28) + (112 ÷ 8) = 7 + 4 + 14 = 25 units/hour.

Time Taken = Total Capacity ÷ Combined Efficiency = 112 ÷ 25 = $4\ ^{12}/25$ hours.

Therefore The correct answer is $4\ ^{12}/25$ hours.

Alternate Method

Given:

Time taken by Pipe A = 16 hours

Time taken by Pipe B = 28 hours

Time taken by Pipe C = 8 hours

Pipe	Hours	Total Work	Efficiency
Pipe A	16	112	7
Pipe B	28	4	
Pipe C	8	14	

Calculations:

=> Total combined efficiency of all pipes = 7 + 4 + 14 = 25 units/hour

=> Total time taken when all pipes operate together = Total Work ÷ Total Efficiency

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=> Time taken = 112 ÷ 25

=> Time taken = 4 $^{12}/_{25}$ hours

Therefore The correct answer is 4 $^{12}/_{25}$ hours.

Additional Information

Pipes & Cisterns Concept

The rules for solving pipe filling problems are identical to Time and Work questions. If a pipe fills a tank in x hours, its 1-hour work is 1/x.

Emptying Pipe (Leakage)

If an outlet pipe empties a full tank in y hours, its 1-hour work is taken as negative (−1/y).

Volume / Capacity of Tank

To avoid complex fraction calculations, the total capacity of the tank is generally assumed to be the LCM of the given time periods.

Q66. Answer: (a) 156

Shortcut Trick

The average of the first 'n' even natural numbers is directly given by the formula: (n + 1).

Here, the total number of terms n = 155.

=> Average = 155 + 1 = 156

Therefore The correct answer is 156.

Alternate Method

Given:

The sequence consists of the first 155 even numbers.

Formula Used:

For an Arithmetic Progression (A.P.), Average = (First term + Last term) ÷ 2

2

1st Term

310

155th Term

156

Average = (2+310)÷2

4

6

308

306

Number Line showing A.P. of Even Numbers

Calculations:

=> The series of the first 155 even numbers is 2, 4, 6, 8, ..., up to 155 terms.

=> First term (a) = 2

=> Common difference (d) = 2

=> The 155^(th) term (Last term) = a + (n − 1)d

=> Last term = 2 + (155 − 1) × 2 = 2 + 154 × 2 = 2 + 308 = 310

=> Average = (First term + Last term) ÷ 2

=> Average = (2 + 310) ÷ 2

=> Average = 312 ÷ 2 = 156

Therefore The correct answer is 156.

Additional Information

Average of First 'n' Natural Numbers

The average of the first 'n' natural numbers is given by the formula: (n + 1) ÷ 2.

Average of First 'n' Odd Numbers

The average of the first 'n' odd natural numbers is exactly equal to 'n'.

Average of Numbers in A.P.

For any sequence of numbers in an Arithmetic Progression, the average is exactly the middle term, calculated as (First term + Last term) ÷ 2.

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Q67. Answer: (d) -11/24

Shortcut Trick

Expand the brackets directly to cancel the x^2 terms:

=> $6x^2 - 12 - 6x^2 - 24x + 15 = 14$

=> $-24x + 3 = 14$

=> $-24x = 11$ => $x = -11/24$

Therefore The correct answer is $-11/24$.

Alternate Method

Given:

$2(3x^2 - 6) - 3(2x^2 + 8x - 5) = 14$

Calculations:

Expand the terms using the distributive property:

=> $(2 \times 3x^2) - (2 \times 6) - (3 \times 2x^2) - (3 \times 8x) - (3 \times -5) = 14$

=> $6x^2 - 12 - 6x^2 - 24x + 15 = 14$

Group the like terms together:

=> $(6x^2 - 6x^2) - 24x + (-12 + 15) = 14$

=> $0 - 24x + 3 = 14$

=> $-24x = 14 - 3$

=> $-24x = 11$

=> $x = -11/24$

Therefore The correct answer is $-11/24$.

Additional Information

Linear Equation in One Variable

An equation representing a straight line that can be written in the form $ax + b = 0$, where a and b are constants and $a \neq 0$.

Distributive Property

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

BODMAS Rule

The sequence of operations used to simplify mathematical expressions: Brackets, Orders, Division/Multiplication, Addition/Subtraction.

Q68. Answer: (d) 9 days

Shortcut Trick

Work equivalency: $6M \times 9 = 6W \times 6$ => $54M = 36W$ => $M \div W = 2 \div 3$

Total work = $54 \times 2 = 108$ units

Combined efficiency of 3M and 2W = $(3 \times 2) + (2 \times 3) = 6 + 6 = 12$ units/day

Required days = $108 \div 12 = 9$ days

Therefore The correct answer is 9 days.

Alternate Method

Given:

Time taken by 6 men = 9 days => Time taken by 1 man = $6 \times 9 = 54$ days

Time taken by 6 women = 6 days => Time taken by 1 woman = $6 \times 6 = 36$ days

Person	Days	Total Work	Efficiency
1 Man	54	108	2
1 Woman	36	3	

Calculations:

=> Efficiency of 3 men = $3 \times 2 = 6$ units/day

=> Efficiency of 2 women = $2 \times 3 = 6$ units/day

=> Combined efficiency of 3 men and 2 women = $6 + 6 = 12$ units/day

=> Total days required = Total Work ÷ Combined Efficiency

=> Days = $108 \div 12 = 9$ days

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Therefore The correct answer is 9 days.

Additional Information

Total Work Formula

Total Work = Number of workers × Efficiency per worker × Number of days.

MDH Rule

M1 × D1 × H1 ÷ W1 = M2 × D2 × H2 ÷ W2, where M is the number of workers, D is days, H is hours, and W is the work done.

Work and Wages

Wages are always distributed in the ratio of the total work done by the individuals, which directly correlates to their working efficiencies if they work for the exact same number of days.

Q69. Answer: (b) 2

Shortcut Trick

Between 430 and 438, odd numbers are 431, 433, 435, 437.

435 is divisible by 5, so it is clearly not prime.

Check primes up to √438 ≈ 20 (i.e., 2, 3, 5, 7, 11, 13, 17, 19) for the remaining candidates.

431 and 433 are not divisible by any of these primes, so they are prime numbers.

437 is exactly divisible by 19 (19 × 23), so it is not prime.

Therefore The correct answer is 2 prime numbers.

Alternate Method

Given:

The range of numbers is from 430 to 438 (both included).

Concept Used:

A prime number is only divisible by 1 and itself.

To check if a number N is prime, we must divide it by all prime numbers up to √N.

Calculation:

=> Numbers in the given range: 430, 431, 432, 433, 434, 435, 436, 437, 438

=> Eliminate all even numbers as they are divisible by 2.

=> Remaining numbers: 431, 433, 435, 437

=> Eliminate 435 since it ends in 5 and is divisible by 5.

=> Remaining candidates to check: 431, 433, 437

=> For these numbers, √N ≈ √438 ≈ 20.9. Prime numbers to check ≤ 20 are 2, 3, 5, 7, 11, 13, 17, 19.

=> Checking 431: Not divisible by any prime ≤ 19. Hence, 431 is prime.

=> Checking 433: Not divisible by any prime ≤ 19. Hence, 433 is prime.

=> Checking 437: Divisible by 19 (437 ÷ 19 = 23). Hence, 437 is a composite number.

=> The prime numbers between 430 and 438 are exactly 431 and 433.

=> Total count of prime numbers = 2

Therefore The correct answer is 2 prime numbers.

Additional Information

Prime Numbers

A prime number is a natural number greater than 1 that has exactly two distinct positive divisors: 1 and itself (e.g., 2, 3, 5, 7, 11).

Primality Test

To check if a number N is prime, it is sufficient to test its divisibility by all prime numbers less than or equal to √N. If none divide perfectly, N is prime.

Twin Primes

Two prime numbers that differ by exactly 2 are called twin primes. For example, 431 and 433 are twin primes since 433 − 431 = 2.

Divisibility Rule for 19

To check if a number is divisible by 19, multiply its last digit by 2 and add it to the remaining truncated number. If the final result is a multiple of 19, the number is divisible by 19.

Q70. Answer: (a) 13

Shortcut Trick

The mode of a dataset is simply the value that appears most frequently.

By visually observing the given marks, the value 13 appears 3 times, which is the highest repetition.

All other values appear only 1 or 2 times.

Therefore The correct answer is 13 marks.

Alternate Method

Given:

Marks scored by 10 students: 13, 20, 15, 13, 19, 12, 12, 11, 13, 10

Formula Used:

Mode = Observation with the maximum frequency in the data set.

0

1

2

3

Freq

1

10

1

11

2

12

3

13

1

15

1

19

1

20

Marks (Values)

Calculations:

=> Let us arrange the data in ascending order to easily count the frequency of each mark:

=> 10, 11, 12, 12, 13, 13, 13, 15, 19, 20

=> Count of 10 = 1

=> Count of 11 = 1

=> Count of 12 = 2

=> Count of 13 = 3

=> Count of 15, 19, and 20 = 1 each

=> Since 13 has the maximum frequency (it occurs 3 times), it is the mode of the given data.

Therefore The correct answer is 13 marks.

Additional Information

Mean

The mean is the average of a given set of numbers, calculated as the sum of all observations divided by the total number of observations.

Median

The median is the exact middle value when the dataset is arranged in ascending or descending order. If the count is even, it is the average of the two middle values.

Empirical Relationship

For a moderately skewed distribution, the relationship between central tendencies is given by: Mode = 3 × Median − 2 × Mean.

Q71. Answer: (c) 96, 48

The logic followed here is:

Logic: 1st number ÷ 2 = 2nd number.

108, 54

=> 108 ÷ 2 = 54

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78, 39

=> 78 ÷ 2 = 38

Now, checking the options:

Option 1) 12, 24

=> 12 ÷ 2 ≠ 24

Option 2) 65, 13

=> 65 ÷ 2 ≠ 13

Option 3) 96, 48

=> 96 ÷ 2 = 48

Option 4) 54, 18

=> 54 ÷ 2 ≠ 18

Hence, the correct option is "Option 3"

Q72. Answer: (d) 654

BODMAS Table:

Given equation: 15 + 7 ÷ 7 × 48 − 2 + 23 × 4 = ?

Now, if '+' and '×' and '-' and '÷' are interchanged, then:

=> 15 × 7 - 7 + 48 ÷ 2 × 23 + 4 = ?

=> 105 - 7 + 24 × 23 + 4

=> 98 + 552 + 4 = 654

Hence, the correct answer is "Option 4".

Q73. Answer: (d) IBE

The logic followed here is:

Option 1) NGK

Option 2) TMQ

Option 3) QJN

Option 4) IBE

Here, 'IBE' is odd among the given options.

Hence, the correct answer is "Option 4".

Q74. Answer: (d) Only conclusion (I) follows.

Given Statements:

Some guns are roses.

All roses are bats.

The least possible Venn diagram for the given statement is:

Conclusions:

I. Some guns are bats.

Since some guns are roses, and ALL roses are bats, it is necessary that those specific guns are also bats. => Conclusion (I) follows.

II. All bats are roses.

The statement "All roses are bats" does not guarantee that all members of the larger set (Bats) are members of the smaller set (Roses). => Conclusion (II) does not follow.

So, Only conclusion (I) follows.

Hence, the correct answer is "Option 4".

Q75. Answer: (d) 1

Logic:

GIRL → 5317

INKS → 2146

Common letter = I

Now,

Common number = 1

Therefore, the letter I corresponds to the number 1.
Code for 'I' = 1
So, The Code for 'I' = 1
Hence, the correct answer is "Option 4".

Q76. Answer: (d) 11

Given numbers: 2436857
Digits: 2, 4, 3, 6, 8, 5, 7
Newly formed arranged in sequence in Ascending order :
2 3 4 5 6 7 8
Sum of the digits which are third from the left and second from the right:
Sum = 4 + 7 = 11
Hence, the correct answer is 'Option 4'.

Q77. Answer: (b) OJL

The logic followed here is:
So, 'OJL' will replace the question mark in the given series.
Hence, the correct answer is "Option 2".

Q78. Answer: (d) CORD - ODRC - DROC

Now,
MINK - IKNM - KNIM
PLOT - LTOP - TOLP
Let's check each Option One by One.
Option 1) TOES - OTES - SOET

T	O	E	S
1	2	3	4
O	T	E	S
2	3	3	4
S	O	E	T
4	2	3	1

Option 2) WAIT - AWIT - TAIW

W	A	I	T
1	2	3	4
A	W	I	T
2	1	3	4
T	A	I	W
4	2	3	1

Option 3) READ - RAED - DAER

R	E	A	D
1	2	3	4
R	A	E	D
1	3	2	4
D	A	E	R
4	3	2	1

Option 4) CORD - ODRC - DROC

C	O	R	D
1	2	3	4
O	D	R	C
2	4	3	1
D	R	O	C
4	3	2	1

So, Only CORD - ODRC - DROC follows the pattern of given letter cluster.
Hence, the correct answer is 'Option 4'.

Q79. Answer: (b) 406

The logic followed here is:
thus, "406" will replace the question mark in the given series.
Hence, the correct option is "Option 2".

Q80. Answer: (a) One

Given: (Left) ? 7 3 ? 2 5 3 ^ # + * @ 2 7 # & 5 2 * # 2 (Right)
Now,
Symbols which is immediately preceded by a number and also immediately followed by a number
So, Needed pattern is: Number - Symbol - Number.
There is only 1 Symbol which is immediately preceded by a number and also immediately followed by a number
Hence, the correct answer is 'Option 1'.

Q81. Answer: (a) 488

The logic followed here is:
thus, "488" will replace the question mark in the given series.
Hence, the correct option is "Option 1".

Q82. Answer: (b) I

Given: H, I, J, K, U, V and W are sitting around a circular table facing the centre of the table..
1) U sits fourth to the left of V.
2)H sits fourth to the right of J.
3) Only two people sit between V and J when counted from the left of V.
4) K is not an immediate neighbour of H or V.
5) I is not an immediate neighbour of K.
Here, I sits third to the right of W
Hence, the correct answer is "Option 2".

Q83. Answer: (c) 53

The logic followed here is:
Nikhil's Rank from Top = 18th
Nikhil's Rank from Bottom = 36th
Total Students = (Rank from the top + Rank from the bottom) - 1
=> (18 + 36) - 1 = 54 -1 = 53.
So, There are 53 students are there in his class.
Hence, the correct answer is "Option 3".

Q84. Answer: (c) Two

Given: Six people, E, F, G, H, I and P, are sitting in a row, facing north.
1) Only two people sit to the left of P.
2) Only two people sit between P and E.
3) Only one person sits between E and H.
4) Only I sits between P and G.

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5) M sits to the immediate right of O.
So, There are 2 people sit between F and I.
Hence, the correct answer is "Option 3".

Q85. Answer: (c) 81 km towards east

Given:
Govind starts from Point Y and drives 12 km towards west.
He then turns right and drives 37 km, takes a left turn, drives 18 km, turns left and drives 63 km.
He then takes a right turn and drives 19 km.
He takes a right turn, drives 35 km, turns left, drives 32 km, then turns left and drives 9 km to stop at Point Z.
So, He should drive 81 km towards east in order to reach Point Y again.
Hence, the correct answer is "Option 3".

Q86. Answer: (c) HY - DD

The logic followed here is:
Option 1) IL - FQ
Option 2) WR - TW
Option 3) HY - DD
Option 4) QE - NJ
Here, 'HY-DD' is odd among the given options.
Hence, the correct answer is "Option 3".

Q87. Answer: (a) KMJS

The logic followed here is:
For, EGLU is related to IKOX
For, UWXG is related to YAAJ
Similarly, for 'GIGP'
So, 'GIGP' will be related to 'KMJS'
Hence, the correct answer is "Option 1".

Q88. Answer: (a) RT-MO

The logic followed here is:
Option 1) RT-MO
Option 2) OQ-JM
Option 3) WY-RU
Option 4) UW-PS
Here, 'RT-MO' is odd among the given options.
Hence, the correct answer is "Option 1".

Q89. Answer: (c) 36

The logic followed here is:
Niku's Rank from Top = 24th
Niku's Rank from Bottom = 13th
Total Students = (Rank from the top + Rank from the bottom) - 1
=> (24 + 31) - 1 = 37 - 1 = 36.
So, There are 36 students are there in his class.
Hence, the correct answer is "Option 3".

Q90. Answer: (c) PUQ 15

The logic followed here is:
So, 'PUQ 15' will replace the question mark in the given series.
Hence, the correct answer is "Option 3".

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Q91. Answer: (c) WMXH

The logic followed here is:

For, GBNS is related to EYPV

For, CVRY is related to ASTB

Similarly, for 'YPVE'

So, 'YPVE' will be related to 'WMXH'

Hence, the correct answer is "Option 3".

Q92. Answer: (c) One

Solution:

The problem asks us to compare the position of the digits in the original number with their positions after the number is rearranged in ascending order.

1. Original Number: 6243514

2. Arranging in Ascending Order:

The digits in the number are 6, 2, 4, 3, 5, 1, 4. When arranged in ascending order, they become 1, 2, 3, 4, 4, 5, 6.

3. Comparison of Positions:

Position	1	2	3	4	5	6	7
Original Number	6	2	4	3	5	1	4
Ascending Order	1	2	3	4	4	5	6
Unchanged?	No	Yes	No	No	No	No	No

The position of the digit '2' at the second position remains unchanged.

Diagrammatic Representation (Showing the single match):

Original Position 1	Original Position 2	Original Position 3	Original Position 4	Original Position 5	Original Position 6	Original Position 7
6	2	4	3	5	1	4
1	2	3	4	4	5	6
New Position 1	New Position 2	New Position 3	New Position 4	New Position 5	New Position 6	New Position 7
Only the digit '2' at position 2 matches: 2 ↔ 2						

The position of only one digit (2) remains the same.

Hence, the correct option is 3.

Q93. Answer: (c) 734

The logic followed here is:

thus, "734" will replace the question mark in the given series.

Hence, the correct option is "Option 3".

Q94. Answer: (b) Son's wife's father

Family Chart:

Decoding the Symbols:

Symbol	¥	#	=	%
Meaning	Father	Brother	Wife	Son

Given: 'S ¥ Y # R = U % P'

It means: S is the Mother of Y, Y is the Brother of R, R is the Wife of U, U is the Father of P.

So, S is the Son's wife's father of P.

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Hence, the correct answer is "Option 2".

Q95. Answer: (b) Only conclusion (II) follows.

Given Statements:

All lions are tigers.

No lion is a cat.

The least possible Venn diagram for the given statement is:

Conclusions:

I. Some cats are lions.

Statement 2 says "No lion is a cat." This guarantees that there is zero overlap between the two categories.

Therefore, "Some cats are lions" is false.

II. Some tigers are lions.

Statement 1 says "All lions are tigers.

" This is a Universal Affirmative statement, which logically implies the Particular Affirmative statement "Some tigers are lions."

Only conclusion (II) follows.

Hence, the correct answer is "Option 2".

Q96. Answer: (a) 9

The logic followed here is:

'SAID' is coded as '6175'

'DIMS' is coded as '7691'

Word	Code
SAID	6175
DIMS	7691

So, '9' is the code for 'M' in the given code language

Hence, the correct answer is "Option 1".

Q97. Answer: (b) Five

Given: Seven boxes T, U, V, W, X, Y and D are kept one over the other but not necessarily in the same order.

1) Only V is kept above Y.

2) Only one box are kept between V and T.

3) T is kept immediately above D.

4) Only two boxes are kept between Y and X

V
Y
T
D
X

.5) U is kept immediately above W.

V
Y
T
D
X
U

W

So, there are 'Five' boxes are kept between W and V.

Hence, the correct answer is "Option 2".

Q98. Answer: (c) 29

BODMAS Table:

Given equation: 42 − 7 × 12 + 3 ÷ 13 = ?

Now, if '+' and '×' and '-' and '÷' are interchanged, then:

=> 42 ÷ 7 + 12 × 3 - 13 = ?

=> 6 + 36 - 13 = ?

=> 42 - 13 = 29

Hence, the correct answer is "Option 3".

Q99. Answer: (b) 0

Solution:

In the question, we need to add 2 to the first digit of each of the five three-digit numbers and then check how many of the resulting numbers have their first digit completely divisible by the second digit.

The given numbers are: 384, 673, 543, 236, 741

Operation: Add 2 to the first digit of each number.

Step-by-step analysis:

Original Number	First Digit	Second Digit (Divisor)	New Digit (First Digit + 2)	Check: Is the new first digit divisible by the second digit?
384	3	8	3 + 2 = 5	5 ÷ 8? (No)
673	6	7	6 + 2 = 8	8 ÷ 7? (No)
543	5	4	5 + 2 = 7	7 ÷ 4? (No)
236	2	3	2 + 2 = 4	4 ÷ 3? (No)
741	7	4	7 + 2 = 9	9 ÷ 4? (No)

Among the resulting numbers, in 0 cases is the first digit completely divisible by the second digit.

Hence, the correct answer is 'Option 2'.

Q100. Answer: (d) Southeast

Given:

Town J is to the west of town M.

Town N is to the south of Town M.

Town K is to the west of Town N.

Town L is to the south of town N.

So, Southeast is the position of town L with respect to town K

Hence, the correct answer is "Option 4".

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