RRB NTPC CBT 2 (Level-2) Official Paper (Held On: 16 June 2022 Shift 3) (Previous Year Paper)

RRB NTPC • 2022 • 120 questions • 90 minutes • Answer key and solutions

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FULL TEST

Q1. The diagonal of a rectangular plot is 37m and its area is 420 m². What is the cost of fencing the plot at Rs. 37.50 per metre?

(a) Rs. 3675
(b) Rs. 3525
(c) Rs. 3750
(d) Rs. 3600

Q2. Which of the following options is the closest approximate value which will come in place of the question mark(?) in the following equation?

24.99% of 799.897 + 29.989% of 120.010 = 190 + 22.998% of ?

(a) 220
(b) 200
(c) 180
(d) 150

Q3. What will be the interest on Rs. 6250 for 3 years if interest accrues at 12% simple interest per annum?

(a) Rs. 2450
(b) Rs. 2250
(c) Rs. 2150
(d) Rs. 2050

Q4. Which Article of the Indian Constitution aims at securing for the citizens a uniform civil code throughout the territory of India?

(a) Article 46
(b) Article 44
(c) Article 43
(d) Article 47

Q5. x and y are in direct proportion and y = 92.5 when x = 37. What will be the value of y when x = 16?

(a) 40
(b) 24
(c) 48
(d) 32

Q6. _____ refer to central bank purchases or sales of government securities in order to expand or contract money in the banking system and influence interest rates.

(a) National market operations
(b) Closed market operations
(c) Open market operations
(d) International market operations

Q7. Which of the following countries had the highest Crude Birth Rate (live births per 1000 population) in the world in 2020, according to World Bank?

(a) Lesotho
(b) China
(c) Egypt
(d) Niger

Q8. Which of the following states is the largest producer of Pulses (total) according to the Economic Survey 2021-22, Government of India?

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

Q9. The effect of the acid caused by ant bites can be neutralised by rubbing moist baking soda or _____ solution, which contains zinc carbonate.

(a) Caprylyl Glycol
(b) Calamine
(c) Behenyl Alcohol
(d) Benzethonium Chloride

Q10. _____ is the sole authority prescribed in the Indian Constitution entrusted with the responsibility of audit of receipts and expenditure of the Union and each State and the Union Territory Governments.

(a) Attorney General of India
(b) Finance Commission of India
(c) Finance Minister
(d) Comptroller and Auditor General of India

Q11. Two trains start at the same time from two stations and proceed towards each other at 30 km/h and 35 km/h, respectively. When they meet, it is found that one train has covered 30 km more than the other. Find the distance between the two stations.

(a) 380 km
(b) 410 km
(c) 390 km
(d) 400 km

Q12. Prime Minister Narendra Modi launched PM Gati Shakti - National Master Plan for Multi-modal Connectivity. What is the proposed financial outlay for the scheme?

(a) 50 lakh crores
(b) 2500 lakh crores
(c) 2000 lakh crore
(d) 100 lakh crores

Q13. Which Article of the Indian Constitution is related with the Oath or Affirmation by judges of High Courts?

(a) Article 185
(b) Article 219
(c) Article 289
(d) Article 256

Q14. A person invested some amount at the rate of 12% per annum simple interest and another amount at the rate of 10% per annum simple interest. He received yearly interest of Rs. 125 from both the investments. But if he had interchanged the amounts invested, he would have received Rs. 3 more as interest. How much did he invest at 10% per annum simple interest originally?

(a) Rs. 600
(b) Rs. 650
(c) Rs. 500

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(d) Rs. 700

Q15. In a certain code language, 'MOMENTUM' is written as 'EMOMNTUM', and 'EQUATION is written as 'AUQETION'. How will 'MAGNETIC' be written in that language?

(a) NGMAETIC
(b) NGAMECTI
(c) NGMAEITC
(d) NGAMETIC

Q16. Study the given arrangement of letters, symbols and numbers, and answer the question that follows.

(Left) G 6 & $ 4 Y 8 9 # @ W H 5 % 6 & K 9 @ R 9 4 T & % # U Y 8 $ # Q Y 8 4 $ (Right)

Which of the following is ninth to the right of the fourteenth from the right end of the given arrangement?

(a) #
(b) Q
(c) Y
(d) T

Q17. The Sarnath Lion Capital erected by the Mauryan Ruler Ashoka, was made up of _____.

(a) Sandstone
(b) Mica
(c) Iron
(d) Marble

Q18. Among six friends, P, Q, R, S, T and U, each of a different age, P is younger than only S. Only three friends are younger than R. U is younger than T. U is not the youngest. How many friends are younger than T?

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

Q19. The circumference of the base of a right circular cylinder is 176 cm and its height is 12 cm. Find the total surface area (in cm^2) of the cylinder. (Use $\pi = 22/7$)

(a) 7040
(b) 7460
(c) 7064
(d) 7640

Q20. The radius of a cylinder is 162/3% more than the radius of a hemisphere. The height of the cylinder is 21 cm. Find the volume of the hemisphere if the volume of the cylinder is equal to the volume of another sphere having radius 7 cm. (Calculate to two decimal places; use $\pi = 22/7$)

(a) 136.09 cm^3
(b) 133.04 cm^3
(c) 134.10 cm^3
(d) 132.08 cm^3

Q21. _____ received the 2021 Abhinandan Saroja National Award by the National Institute of Indian Classical Dance.

(a) Aparna Satheesan
(b) Chandrashekhar Kambara
(c) Priyadarshan
(d) Prabha Atre

Q22. In a certain code language, 'LEAF' is written as 'OGDH', and 'TREE' is written as 'WTHG'. How will 'STEM' be written in that language?

(a) UVGH
(b) VVHO

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(c) UVHO
(d) VUHN

Q23. From the given options, select the one that correctly describes the meaning of 'Head Count Ratio'.
(a) When the number of people with average income is estimated as the proportion of people on par with the poverty line
(b) When the number of poor is estimated as the proportion of people above the poverty line
(c) When the number of rich is estimated as the proportion of people on par with the poverty line
(d) When the number of poor is estimated as the proportion of people below the poverty line

Q24. Find the circumference of a circle whose diameter is 30 cm long. [Use π = 3.14]
(a) 141.3 cm
(b) 94.2 cm
(c) 47.1 cm
(d) 188.4 cm

Q25. What is the name of the world's first Gamified Sanskrit learning application, launched by the Indian Council for Cultural Relations (ICCR), along with Gamapp Sportswizz Tech Private Limited in April 2021?
(a) Sanskrit MAL
(b) Little Guru
(c) Learn Sanskrit
(d) Letter2Sound

Q26. 12 skilled, 14 semi-skilled and 10 unskilled workers complete a job for Rs. 13189. If their individual wages be in the ratio of 9 : 5 : 4, then the total money (in Rs.) earned by 10 unskilled workers is:
(a) 2420
(b) 3420
(c) 2240
(d) 3240

Q27. If a positive integer n is divided by 7, then the remainder is 3. Which of the following numbers yields a remainder of 0 when it is divided by 7?
(a) n + 4
(b) n + 3
(c) n + 5
(d) n + 2

Q28. Atlas mountain range lies in which of the following continents?
(a) Africa
(b) Europe
(c) North America
(d) Asia

Q29. Computer memory is made up of a large number of cells. Each cell is capable of storing _____ of information in the form of binary numbers.
(a) two bits
(b) one bit
(c) one byte
(d) one nibble

Q30. Neha is the mother of Vipul. Rajat is Neha's brother. Prabhakar is the father of Rajat. How is Prabhakar related to Vipul?
(a) Mother's father
(b) Mother's brother
(c) Father's brother
(d) Father's father

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Q31. If it was Monday on 12th August in a particular year, then what will be the day on 26th September of the same year?

(a) Tuesday
(b) Friday
(c) Thursday
(d) Wednesday

Q32. Which ruler of the Mamluk Sultanate was the Sultan of Delhi from 1236 to 1240?

(a) Aram Shah
(b) Ruknuddin Firoz
(c) Razia Sultana
(d) Nasiruddin Mahmud

Q33. Most of the standard Harappan seals were made of _____, a kind of soft stone that was square in shape with a 2 × 2 dimension and was used for commercial purposes.

(a) Steatite
(b) Golden rutile
(c) Selenite
(d) Rhodonite

Q34. From among the following _____ learnt music from Swami Haridas for eleven years.

(a) Ramdas
(b) Tansen
(c) Tanarang
(d) Baiju Bawra

Q35. Where was India's first manned ocean mission Samudrayaan launched by the Union Minister Dr. Jitendra Singh, in October 2021?

(a) Hyderabad
(b) Mumbai
(c) Chennai
(d) Kochi

Q36. Simplify the following expression:

2(1)/6 × {119/26 + 15/13 × (5/7 ÷ 25/14)}

(a) 43/4
(b) 44/5
(c) 45/6
(d) 42/3

Q37. Find the value of

32/46 × 94/576 × 184/282

(a) 2/3
(b) 27/2
(c) 2/9
(d) 2/27

Q38. Select the correct combination of mathematical signs that can sequentially replace the * signs and balance the given equation.

19 * 5 * 4 * 2 * 4 * 13

(a) ÷, +, -, ×, =
(b) +, ×, -, =, ÷
(c) -, ×, ÷, +, =
(d) ÷, ×, +, -, =

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Q39. Few people are sitting in a row facing north. R is sitting 3^(rd) to the left of U. Only two persons are sitting between R and T. Only one person sits between Q and U. Only one person sits to the right of U. Only V sits to the left of T. How many people are sitting in the row?

(a) 7
(b) 9
(c) 11
(d) 10

Q40. What is the third stage (after larva) in the lifecycle of a butterfly called?

(a) Caterpillar
(b) Egg
(c) Pupa
(d) Nymph

Q41. Martin starts walking from his house in east direction. He walks 10m takes a left and walks 12m. Next he takes a right turn and walks 3m. Then he turns left and walks 1m. He again turns left and walks 5m. Towards which direction is he moving now? (All turns are 90° turns only)

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

Q42. Study the given information carefully and answer the question that follows.

Six persons Anshul, Manohar, Pardhu, Vikram, Vasu and Prerna are standing in a circle, facing the centre. Prerna is to the immediate right of Vikram. Manohar is an immediate neighbour of both Vikram and Pardhu. Anshul is an immediate neighbour of both Vasu and Pardhu.

Who stands to the immediate left of Anshul?

(a) Vasu
(b) Vikram
(c) Manohar
(d) Pardhu

Q43. The vernacular Press Act proposed by _____ was intended to prevent the vernacular press from expressing criticism of British policies.

(a) Lord Irwin
(b) Lord Chelmsford
(c) Lord Mountbatten
(d) Lord Lytton

Q44. Let 0° < Θ < 90° .Then fraccotΘ - 11 - tanΘ ÷ (fracsinΘ 1 + cosΘ + frac1 + cosΘ sinΘ) is equal to:

(a) fraccosΘ 2
(b) fracsecΘ 2
(c) cosΘ
(d) sinΘ

Q45. What is the Birth rate of India (for 2019) according to Sample Registration System?

(a) 4%
(b) 8.9%
(c) 19.7%
(d) 20.4%

Q46. What will be value of

1/0.0001191, if 1/11.91 = 0.083963

(a) 10^6 × 0.083963
(b) 10^5 × 0.083963

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(c) 10^4 × 0.083963
(d) 10^7 × 0.083963

Q47. The second alphanumeric-cluster is obtained by changing the first alphanumeric-cluster following a certain operation and logic. The same pattern is followed in three of the following four pairs. In which of the following pairs is the pattern NOT followed?
(a) HP7 : LT35
(b) LR9 : PU55
(c) PJ3 : TN15
(d) DL5 : HP25

Q48. What will be the median of all the prime numbers between 20 and 62?
(a) 41
(b) 38
(c) 42
(d) 39

Q49. The New York Times won the Pulitzer Prize, 2021, for which work in the prestigious Public Service category?
(a) The coverage of Environmental issues
(b) The coverage of the death of George Floyd
(c) The coverage of the coronavirus pandemic
(d) The working of the government

Q50. Find the greatest possible number which on dividing 2307 and 3105 leaves remainders of 7 and 5 respectively.
(a) 110
(b) 105
(c) 100
(d) 102

Q51. Simplify the following expression:
$10 - 18 \div 3 \times 3 + 27 \div 3^2$
(a) -5
(b) 11
(c) 21/9
(d) -11

Q52. The positive value of
$1/(1 + \sqrt{2}) + 1/(\sqrt{2} + \sqrt{3}) + 1/(\sqrt{3} + \sqrt{4}) + \cdots + 1/(\sqrt{15} + \sqrt{16})$ is
(a) 2
(b) 3
(c) 1
(d) 4

Q53. Lake Pangong Tso is the water body shared by India and _____.
(a) Myanmar
(b) Bhutan
(c) China
(d) Nepal

Q54. Which of the following is the correct explanation of the term 'Capital Receipts"?
(a) The receipts that do not lead to a claim on the government
(b) The receipts of the government which create liability or reduce financial assets
(c) The receipts of the grants given to state governments and other parties
(d) The receipts of the government which result in the reduction of financial liabilities

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Q55. Who among the following was the longest serving Attorney General for India?

(a) CK Daphtary
(b) Motilal Chimanlal Setalvad
(c) KK Venugopal
(d) Niren De

Q56. Point A is 18 m to the east of Point B. Point B is 22 m to the north of Point C. Point D is 11 m to the west of Point C. Point E is 11 m to the south of point D. Point X is 29 m to the east of Point E.

What is the shortest distance between Point A and Point X?

(a) 33 m
(b) 11 m
(c) 21 m
(d) 10 m

Q57. What should come in place of p in the following equation.

43240 - 30608 = p × 160

(a) 78.95
(b) 78.59
(c) 75.89
(d) 79.85

Q58. Study the given information carefully and answer the question that follows.

In an interview at a college, eight people, including the Principal, are sitting in a square formation facing towards the centre, While four of them are seated at the corners, the remaining four are seated at the centre of each side of the square. Bahl is sitting diagonally opposite Nikon. Nikon is sitting to the immediate right of Eva. Pearson is an immediate neighbour of Eva. Pearson is diagonally opposite Charlie. Charlie is seated to the immediate left of the Principal. Philip is not sitting to the immediate right of Bahl. Only three people sit between Philip and Jakson.

Who sits second to the left of Eva?

(a) Charlie
(b) Jakson
(c) Bahl
(d) Philip

Q59. Under which of the following schemes, do the designated states procure, store and issue food grains under the Targeted Public Distribution System?

(a) Decentralised Procurement Scheme
(b) Minimum Support Price
(c) Centralised Procurement Scheme
(d) Price Stabilisation Fund

Q60. Which of the following countries produced the maximum amount of sugarcane, according to Food and Agriculture Organization, in the year 2019?

(a) Japan
(b) Brazil
(c) China
(d) India

Q61. Pipes A and B can fill an empty tank completely in 42 minutes and 56 minutes respectively. Pipe C alone can empty the full tank in 84 minutes. All the three pipes are opened together for 8 minutes and then C is closed. In how much time (in minutes) will A and B together fill the remaining part of the tank?

(a) 16
(b) 182/7
(c) 18
(d) 171/7

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Q62. The Thrissur Pooram festival of Kerala is held _____ at the Vadakkunnathan Temple in Thrissur town.

(a) quarterly
(b) weekly
(c) annually
(d) monthly

Q63. Consider the given statement and decide which of the given expectations is/are implicit in the statement.

Statement:

A customer can avail banking services at his/her doorstep.

Expectations:

I. This will create problems for the bank.

II. Customers would be very happy with the service.

(a) Only expectation II is implicit.
(b) Both expectations I and II are implicit.
(c) Only expectation I is implicit.
(d) Neither expectation I nor expectation II is implicit.

Q64. There are six friends A, B, C, D, E, and F. F ranked higher than B and C. D ranked higher than C and E. F ranked lower than E. A ranked higher than F but ranked lower than E. Who among them ranked the highest?

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

Q65. In each of the given number-clusters, the number on the right side of = (the equal to sign) is calculated by performing certain mathematical operations on the four numbers on the left of = (the equal to sign). All three number-clusters follow the same pattern. Select the number from among the given options that can replace the question mark (?) in the third number-cluster.

12, 4, 37, 25 = 4

2, 36, 87, 51 = 2

18, 3, 58, 49 = ?

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

Q66. Six persons J, K, L, M, N and O are sitting in a straight row all facing north but not necessarily in the same order. Only three persons are sitting to the left of M and only four persons are sitting to the right of L. N is sitting third to the right of J. O is not sitting at any of the extreme ends of the row.

Who is sitting at the extreme left end?

(a) J
(b) K
(c) N
(d) L

Q67. The value of $(34.2 \times 6.84) \div (102.6 \times 0.00171)/((12.5 \times 0.8) \div 0.03)$ is

(a) 0.004
(b) 0.04
(c) 0.4
(d) 4

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Q68. India defeated which of the following countries, to clinch the bronze medal in the Women's Asia Cup Hockey Tournament, 2022?

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

Q69. XYZ, a shipping corporation company, decided to recruit management trainees for one of its plants. The company laid down the following criteria for selecting candidates.

A. Should be a marine engineering graduate with a minimum of 65% marks.

B. Should have done an internship of at least 1 year with some shipping company.

C. Should not be less than 21 years of age and more than 29 years of age as on 1^(st) July 2020.

D. Should have secured a minimum of 75% marks in the common entrance test.

Anirudh, who was born on 12th March 1993, is a marine engineer with 61% marks and has also done an internship for a period of 14 months with a renowned shipping company. He has been working as a supervisor in a company for the past 2 years. He has secured 80% marks in the common entrance test.

Based on the above data (you cannot assume anything else), decide whether Anirudh is eligible for the above post.

(a) Data is insufficient to take a decision.
(b) He should be rejected.
(c) He should be selected.
(d) He should be recruited but at a lower post.

Q70. Virender Singh Pathania, who was in the news recently, has been appointed to which post in December 2021?

(a) Director General of Air Operations
(b) Chief of the Air Staff
(c) Director General of the Indian Coast Guard
(d) Air Officer in Charge of Personnel

Q71. Which of the following is NOT an integral component of the MS-Office 365 suite?

(a) MS-Access
(b) MS-Excel
(c) MS-Word
(d) MS-Paint

Q72. If 11/4 × (53/4 ÷ 2/7ofk) ÷ 27/8 - 33/4 = (17 - 4) ÷ 2of2, then what is the value of (k + 1)/(k - 1) ?

(a) 7
(b) 11/3
(c) 5/2
(d) 9

Q73. Which of the following options is the closest approximate value which will come in place of the question mark(?) in the following equation?

895.98 + 185.01 + 851.86 + 524.09 = ?

(a) 3540
(b) 1490
(c) 2460
(d) 2010

Q74. With reference to space science, which of the following planets do NOT have even one moon?

(a) Jupiter and Saturn
(b) Venus and Mercury
(c) Neptune and Mars
(d) Uranus and Neptune

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Q75. How many scientists received the Shanti Swarup Bhatnagar Award (SSB) for Science and Technology, 2021, on the occasion of the 80^(th)Foundation Day of the Council of Scientific and Industrial Research (CSIR)?

(a) 10
(b) 11
(c) 12
(d) 15

Q76. A, B, C, D, E, F, G and H are sitting around a square table facing the centre of the table. Four of them are sitting at each of the corners, while the other four are sitting at the exact centre of each of the sides.

G sits at one of the comers of the table. E sits second to the left of G. F is not an immediate neighbour of E. Only three people sit between F and H. B sits to the immediate left of H. A sits third to the right of C. Who sits third to the right of D?

(a) B
(b) E
(c) H
(d) G

Q77. Calculate the value of Range/Median for the set of data given below:

134, 98, 194, 122, 108, 156

(a) 48/61
(b) 3/4
(c) 8/9
(d) 48/67

Q78. Radhika can complete a work in 15 days and Rishi can complete the same work in 30 days. Radhika started the work alone and left after 2 days of work. Then Rishi continued the work. Find the time taken by Rishi to complete the remaining work.

(a) 26 days
(b) 24 days
(c) 23 days
(d) 25 days

Q79. Study the given information carefully and answer the question that follows.

In a family party, Amelia, Olivia, Isha, Emily, Poppy and Jessica are sitting in a row, all facing north. Both Poppy and Jessica have two persons sitting on one of their sides and three persons on the other side. Both Amelia and Olivia are sitting on one of the extreme ends each. Isha is sitting to the immediate left of Amelia. Who is sitting to the immediate right of Olivia?

(a) Poppy
(b) Emily
(c) Amelia
(d) Jessica

Q80. In the question two statements are given and these statements are followed by two conclusions. Read the conclusions and then decide which of the given conclusion logically follows.

Statements:

Some bags are notebooks.

All notebooks are laptops.

Conclusions:

(I) Some bags are laptops.

(II) No bag is a laptop.

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

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Q81. In a certain code language, 'MONTH' is written as 'OMPHT', and 'MARCH' is written as 'AMTHC'. How will 'APRIL' be written in that language?

(a) PATLI
(b) PAIRL
(c) RAPLE
(d) PARLI

Q82. If Rs. 5000 is invested for a period of three years at 20% compound interest per annum, compounded annually, what will be the amount received after 3 years?

(a) Rs. 8640
(b) Rs. 8680
(c) Rs. 8000
(d) Rs. 8480

Q83. Which of following is used to treat bacterial infection inside the human body?

(a) Anaesthetic
(b) Antibiotic
(c) Antiseptic
(d) Antipyretic

Q84. Among the following pairs of lakes and the states in which they are located, which one has been INCORRECTLY paired?

(a) Chilika Lake - Odisha
(b) Kolleru Lake - Maharashtra
(c) Loktak Lake - Manipur
(d) Sultanpur Lake - Haryana

Q85. Which of the following reports, prepared in the 1940s, was specifically prepared on the Agricultural prices?

(a) Gadgil Report
(b) Krishnamachari Report
(c) Saraiya Report
(d) Kheragat Report

Q86. 'Dasbodh' is primarily a compilation of writings and sermons of _____.

(a) Ramanuja
(b) Chaitanya
(c) Samarth Ramdas
(d) Kabir

Q87. If all the letters of the English alphabet are divided into two equal halves and the second half is written first followed by the first half, then which letter would appear at the fifth place to the right of the 11^(th) letter from the left?

(a) C
(b) Y
(c) Z
(d) A

Q88. Which of the following rivers originates in Sikkim, flows through West Bengal and then enters Bangladesh?

(a) Teesta
(b) Damodar
(c) Dhansri
(d) Ghaggar

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Q89. A vendor sells 15 lemons for 3 rupees gaining 60%. How many did he buy for a rupee?

(a) 8
(b) 7
(c) 10
(d) 9

Q90. The price of one currency in terms of another is known as:

(a) foreign exchange rate
(b) import exchange rate
(c) export exchange rate
(d) international currency

Q91. Among A, B, C, D, E and F, only one person likes the colour Black. Among them, only two study in class 12^(th), while the rest study in class 10^(th). Only C is in the same class as F. D likes the colour Pink. None of those studying in 12^(th) like the colour Black. Neither A nor E likes the colour Black.

Who among them likes the colour Black?

(a) C
(b) F
(c) B
(d) A

Q92. Which of the following fishing grounds is located on the confluence of Labrador current and Gulf Stream?

(a) Falkland island
(b) Southwest African Coast
(c) Newfoundland
(d) Oyashio fishing ground

Q93. Excluding stoppages, the speed of a bus is 45 kmph and including stoppages, it is 27 kmph. For how many minutes does the bus stop per hour?

(a) 40 mins
(b) 24 mins
(c) 36 mins
(d) 20 mins

Q94. Select the option that is related to the sixth letter-cluster in the same way as the first letter-cluster is related to the second letter-cluster and the third letter-cluster is related to the fourth letter-cluster.

GCN : LHS :: OQU : TVZ :: ? : KRY

(a) DMQ
(b) FMT
(c) GNT
(d) ENS

Q95. Dr Lakshminarayana Subramaniam is an Indian _____ was honoured with the coveted Padma Bhushan in 2001.

(a) Violinist
(b) Pianist
(c) Sitarist
(d) Guitarist

Q96. Which of the following is NOT a classical dance form of South India?

(a) Sattriya
(b) Mohiniyattam
(c) Bharatnatyam
(d) Kathakali

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Q97. A train travelling at 72 km/h crosses a post in 12 seconds. What is the length of the train?

(a) 240 m
(b) 200 m
(c) 180 m
(d) 225 m

Q98. The straight-line kx - 3y = 6 passes through the point (3, 2). What is the value of k?

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

Q99. If 24% of a number is 39, then what is the number?

(a) 162.5
(b) 161.5
(c) 163.5
(d) 160.5

Q100. Select the number from among the given options that can replace the question mark (?) in the following series.

6, 11, 19, 33, 59, 109, ?

(a) 205
(b) 218
(c) 229
(d) 207

Q101. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

No dog is a cat.

All cats are rats.

Conclusions:

I. No dog is a rat.

II. No rat is a dog.

III. Some rats are cats.

IV. All rats are cats.

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

Q102. Which among the following is located in the state of Arunachal Pradesh?

(a) Diskit Monastery
(b) Tawang Monastery
(c) Hemis Monastery
(d) Thiksey Monastery

Q103. Two equal circles, each having a radius of 24 cm, intersect each other, such that each passes through the centre of the other. The length of the common chord is _____ cm.

(a) $30\sqrt{3}$
(b) $36\sqrt{2}$
(c) $24\sqrt{3}$
(d) $36\sqrt{3}$

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Q104. Select the option that is related to the fifth alphanumeric-cluster in the same way as the second alphanumeric-cluster is related to the first alphanumeric-cluster and the fourth alphanumeric-cluster is related to the third alphanumeric-cluster.

HR12 : MY36 :: EJ14 : JQ42 :: PB17 : ?

(a) UI51
(b) UF32
(c) VF34
(d) VE36

Q105. If the radius and the height of a cylinder are 0.2m and 0.7m respectively, then find its curved surface area. [Use π = 22/7]

(a) 0.8 m²
(b) 8.8 m²
(c) 0.88 m²
(d) 88 m²

Q106. M is 85 m south-west of F. If C is 85 m south-east of F, then C is in which direction with respect to M?

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

Q107. A question is given, followed by three statements labelled I, II and III. Identify which of the statements is/are sufficient to answer the question.

Question:

Who ranked first in the class?

Statements:

I. Sreeja ranked 2^(nd).

II. Aman ranked one rank below Sreeja.

III. Rohit ranked better than Aman.

(a) Each statement I, II and III alone is sufficient.
(b) Statement I alone is sufficient, while Statement II alone is not sufficient.
(c) Statement II alone is sufficient, while Statement III alone is not sufficient.
(d) All statements I, II and III together are sufficient.

Q108. The unique festival of flowers Bathukamma is a colourful and vibrant festival of _____ and is celebrated by women, with flowers that grow exclusively in each region.

(a) West Bengal
(b) Tripura
(c) Gujarat
(d) Telangana

Q109. The prohibition of human trafficking has been laid under _____ in the Indian Constitution.

(a) Article 22
(b) Article 23
(c) Article 21
(d) Article 24

Q110. In a certain code,

'red fancy light' is written as TK MD BH,

'tomatoes are red' is written as MD NG LS.

Which of the following is the code for 'red'?

(a) TK
(b) BH

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(c) MD
(d) NG

Q111. Select the letter-cluster from among the given options that can replace the question mark (?) in the following series.
CEM, GIP, KMS, OQV, ?
(a) SUZ
(b) SUY
(c) RTY
(d) RTX

Q112. Which of the following states of India has the highest number (absolute) of people living in rural areas according to the census of India 2011?
(a) Bihar
(b) Rajasthan
(c) Jharkhand
(d) Uttar Pradesh

Q113. Two students appeared for an entrance examination. One of them secured 15 marks more than the other and his marks are 80% of the sum of their marks. What are the marks obtained by each of them?
(a) 5 and 20
(b) 6 and 21
(c) 4 and 19
(d) 8 and 23

Q114. In which layer of the atmosphere is ozone most concentrated?
(a) Troposphere
(b) Mesosphere
(c) Thermosphere
(d) Stratosphere

Q115. Equilibrium national income occurs where aggregate supply _____
(a) equals aggregate consumption
(b) equals aggregate demand
(c) equals aggregate production
(d) equals aggregate expenditure

Q116. Albert Bourla, winner of the Genesis Prize 2022, is the CEO of which of the following companies?
(a) Pfizer Inc.
(b) Merck & Co. Inc.
(c) Novartis International AG
(d) GlaxoSmithKline plc

Q117. If the mean of 14, 6, 2a, and 16 is 12, then find the value of a where a > 0.
(a) 5
(b) 4
(c) 6
(d) 8

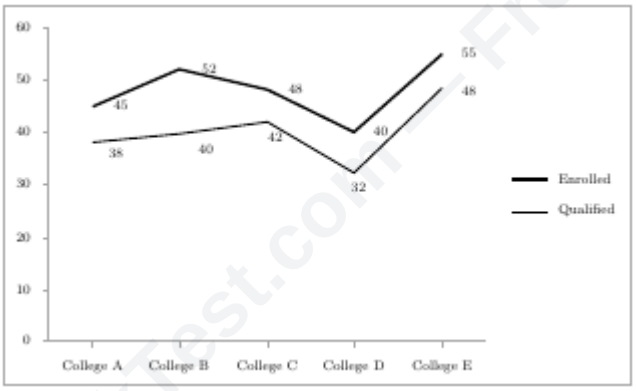
Q118. Archaeologist R Nagaswamy, who passed away in January 2022, is known for his archival research on temple inscriptions and art history of which place?
(a) Telangana
(b) Karnataka
(c) Andhra Pradesh
(d) Tamil Nadu

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Q119. The area of a rhombus is 440 cm². If the length of one of its diagonals is 20 cm, then what is the length of its other diagonal ?

(a) 88 cm
(b) 11 cm
(c) 44 cm
(d) 22 cm

Q120. The following graph represents the number of students enrolled and the number of students qualified in five colleges during a particular year.



What is the ratio of enrolled to qualified students across all colleges?

(a) 3 : 7
(b) 13 : 3
(c) 6 : 7
(d) 6 : 5

ANSWER KEY

1	b	2	b	3	b	4	b	5	a	6	c	7	d	8	c	9	b	10	d
11	c	12	d	13	b	14	b	15	d	16	b	17	a	18	a	19	a	20	c
21	a	22	b	23	d	24	b	25	b	26	a	27	a	28	a	29	b	30	a
31	c	32	c	33	a	34	b	35	c	36	a	37	d	38	c	39	b	40	c
41	b	42	a	43	d	44	a	45	c	46	b	47	b	48	c	49	c	50	c
51	a	52	b	53	c	54	b	55	b	56	a	57	a	58	b	59	a	60	b
61	b	62	c	63	a	64	d	65	c	66	b	67	d	68	d	69	b	70	c
71	d	72	d	73	c	74	b	75	b	76	b	77	b	78	a	79	b	80	a
81	a	82	a	83	b	84	b	85	b	86	c	87	a	88	a	89	a	90	a
91	c	92	c	93	b	94	b	95	a	96	a	97	a	98	a	99	a	100	d
101	b	102	b	103	c	104	a	105	c	106	c	107	d	108	d	109	b	110	c
111	b	112	d	113	a	114	d	115	b	116	a	117	c	118	d	119	c	120	d

SOLUTIONS

Q1. Answer: (b) Rs. 3525

Given:

Diagonal of a rectangular field = 37m

Area = 420 m²

Rate of fencing = Rs. 37.5/m

Formula used:

Area of the rectangular field = l × b

Diagonal of the rectangle field = $\sqrt{(l^2 + b^2)}$

Perimeter = $2 \times (l + b)$

Calculation:

$\Rightarrow \sqrt{(l^2 + b^2)} = 37$

$\Rightarrow (l^2 + b^2) = (37)^2$ .....(1)

$\Rightarrow l \times b = 420$ .....(2)

$\Rightarrow$ (1) + 2 × (2), we get,

$\Rightarrow (l^2 + b^2) + 2lb = (37)^2 + 2 \times 420$

$\Rightarrow (l + b)^2 = 1369 + 840 = 2209$

$\Rightarrow (l + b) = 47$

Perimeter

$\Rightarrow 2 \times (l + b) = 2 \times 47 = 94$ m

The total cost of fencing the field,

$\Rightarrow 37.5 \times 94 = $ Rs. 3525.

Therefore The total cost of fencing is Rs. 3525.

Q2. Answer: (b) 200

Calculations:

Let the unknown number be 'a'.

(25% × 800) + (30% × 120) = 190 + (23% of a)

$\Rightarrow$ (25% × 800) + (30% × 120) - 190 = (23% × a)

$\Rightarrow$ (0.25 × 800) + (0.30 × 120) - 190 = (0.23 a)

$\Rightarrow$ 200 + 36 - 190 = 0.23a

$\Rightarrow$ 10 + 36 = 0.23a

$\Rightarrow$ a = 46/0.23

$\Rightarrow$ 200.

Therefore The simplified value will be 200.

Q3. Answer: (b) Rs. 2250

Given:

Principle (P) = Rs. 6250

Rate of interest (R) = 12% per annum

Time period (T) = 3 years

Formula used:

Simple Interest (SI) = (P × R × T)/100

Calculations:

SI = (6250 × 12 × 3)/100

$\Rightarrow$ SI = 225000/100

$\Rightarrow$ SI = Rs. 2250

Therefore The Simple Interest will be Rs. 2250.

Q4. Answer: (b) Article 44

The correct answer is Article 44.

Key Points

• The Uniform Civil Code calls for the formulation of one law for India, which would be applicable to all religious communities in matters such as marriage, and divorce adoption.

• The Code comes under Article 44 of the Constitution, which lays down that the state should endeavour to secure a Uniform Civil Code for the citizens throughout the territory of India

• The Saffron Party was the first to promise the implementation of UCC if it comes to power and the issue was part of its 2019 election manifesto.

• The objective of This article of the Directive Principles in the Indian Constitution was to address the discrimination against vulnerable groups and harmonize diverse cultural groups across the country.

Additional Information

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• Article 46 calls for the promotion of educational and economic interests of Scheduled Castes, Scheduled Tribes and other weaker sections.

• Article 43A Participation of workers in the management of industries.

Q5. Answer: (a) 40

Shortcut Trick

Since x and y are in direct proportion, the ratio y/x is constant.

Constant ratio (k) = 92.5 ÷ 37 = 2.5

Required value of y = 16 × 2.5 = 40

Therefore The correct answer is 40.

Alternate Method

Given: x1 = 37, y1 = 92.5 and x2 = 16

Formula: For direct proportion, y1/x1 = y2/x2

=> 92.5 / 37 = y / 16

=> 2.5 = y / 16

=> y = 2.5 × 16

=> y = 40

Therefore The correct answer is 40.

Additional Information

Direct Proportion

Two quantities x and y are in direct proportion if the ratio x/y remains constant (k). The relation is expressed as y = kx.

Inverse Proportion

Two quantities x and y are in inverse proportion if their product xy remains constant (k). The relation is expressed as y = k/x.

Constant of Proportionality

The value k is the constant of proportionality, which defines the rate of change between the two related variables.

Q6. Answer: (c) Open market operations

The correct answer is open market operations.

Key Points

• Open market operations refer to central bank purchases or sales of government securities in order to expand or contract money in the banking system and influence interest rates.

• It comes under macroeconomics.

• OMO is an activity by a central bank to give liquidity in its currency to a bank or a group of banks.

• The central bank gives money as a deposit for a defined period.

• The usual aim of OMO is following:

• To manipulate the short-term rate.

• Indirectly the total money supply.

• Expanding money or contracting the money supply.

Additional Information

• With a closed market order, the insider is buying or selling shares at a price above or below the market and directly from and to the company rather than openly in the market.

• The domestic and foreign market in a given country. That is, the national market describes the supply and demand for all securities that are traded in a country. Each national market is governed by the regulations of its country.

• An international market is defined geographically as a market outside the international borders of a company's country of citizenship.

Q7. Answer: (d) Niger

The correct answer is Niger.

Key Points

• Niger is the highest crude birth rate in the world in 2020 with 6.8 children per woman.

• The birth rate in a period is the total number of live births per 1000 population divided by the length of the period in years.

• The average global birth rate is 18.1 birts per 1000 total population in 2021.

• The death rate was 7.7 per 1000.

Additional Information

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• China had a Crude Birth Rate of 11.29 births per thousand population.
• Egypt had a Crude Birth Rate of 25.07 birts per thousand population.
• In 2020, the birth rate for Lesotho was 26 per 1,000 people.

Q8. Answer: (c) Madhya Pradesh

The correct answer is Madhya Pradesh.

Key Points

• The Economic Survey of India is an annual document of the Ministry of Finance, Government of India.
• The Department of Economic Affairs, Ministry of Finance Presents the survey in the Parliament every year,
• They present the Servey just before the Union Budget.
• It is prepared under the guidance of the Chief Economic Adviser of India.

Additional Information

• Gujarat is the largest producer of motor cash crops like cotton, groundnut, tobacco cumin, sesamum, etc.
• West Bengal is the largest producer of rice in India.
• Uttar Pradesh is the largest producer of wheat in India.

Q9. Answer: (b) Calamine

The correct answer is Calamine.

Key Points

• Calamine is used to reduce the irritating effect of ambient because it reacts with sodium hydrogen carbonate released due to the ba few with formic acid present in calamine.
• Ants release a chemical called formic acid onto your skin when they bite.
• The release of this acid. along with the pinch form from the mandibles, cues symptoms of an ant bite.

Additional Information

• Benzyl Alcohol is a base.
• Caprylyl Glycol is an alcohol derived from caprylic acid.
• Benzethonium Chloride also known as hyaline is a synthetic quaternary ammonium salt.

Q10. Answer: (d) Comptroller and Auditor General of India

The correct answer is Comptroller and Auditor General of India.

Key Points

• The Comptroller and Auditor General is the sole authority authorized in the Constitution charged with the responsibility of audit of accounts of the Union and of the States.
• As state by article 150 of the Constitution, the form in which the accounts of the Union and of the states shall be retained is to be authorized by the President on the advice of the Comptroller and Auditor General of India.
• As state by the provisions of section 139 of the Companies Act 2013, the auditor for a government company shall be appointed by the Comptroller & Auditor General of India (C&AG for a financial year within 180 days from the starting point of the financial year.

Additional Information

• The Attorney General for India is the Indian government's chief legal advisor, and is its principal Advocate previous to the Supreme Court of India.
• The Finance Commissions are commissions regularly constituted by the President of India under Article 280 of the Indian Constitution to define the financial relations joining the central government of India and the individual state governments.
• The Minister of Finance is the head of the Ministry of Finance of the central government of india.

Q11. Answer: (c) 390 km

Given:

Speed of trains are respectively 30 km/h and 35 km/h

One train traveled 30 km more than other

Formula used:

Distance = Speed × Time

Calculations:

Let the time of traveling be 't' hours

Distance travelled by train with speed 35 km/h = 35 × t = 35t

Distance travelled by train with speed 30 km/h = 30 × t = 30t

According to the question

The difference in distance traveled by two trains = 30 km

=> 35 × t - 30 × t = 30

=> 35t - 30t = 30

=> 5t = 30

=> t = 6 hours

Distance between stations = (35 × 6) + (30 × 6) = 210 + 180 = 390 km

Therefore The distance between the two stations is 390 km.

Q12. Answer: (d) 100 lakh crores

The correct answer is 100 lakh crores.

Key Points

• Prime Minister Narendra Modi announced that the center will launch the "PM Gati Shakti Master Plan" a rupees 100 Lakh crore project for developing "Holistic Infrastructure.

• PM Modi pegged the project as a source of employment opportunities for the youth in the future.

• It also raises possibilities of new future economic zones.

• PM Gati Shakti - National Master Plan at Pragati Maidan in New Delhi on October 13, 2021.

Additional Information

• Other Important Yojna's By PM

• Pradhan Mantri Jan Dhan Yojana (PMJDY).

• Jan Dhan to Jan Suraksha.

• Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY).

• Pradhan Mantri Suraksha Bima Yojana (PMSBY).

• Atal Pension Yojana (APY).

• Pradhan Mantri Mudra Yojana.

• Stand Up India Scheme.

• Pradhan Mantri Vaya Vandana Yojana.

Q13. Answer: (b) Article 219

Correct answer is Article 219.

Key Points

• Draft Article 195 (Article 219) was talk over on 7th June 1949.

• It have need of judges of a High Court to take an oath or assertion prior to entering office.

• Every person appointed to be a judge of a supreme court in a very State shall, before he enters upon his office, make and subscribe before the Governor of the State or some person appointed in this behalf by him a declaration consistent with the shape began for the aim within the 3rd Schedule.

• Draft Article 195 (Article 219) was debated on 7th June 1949 oath or affirmation before entering office.

Additional Information

• Article 185_ The Chairman or the Deputy Chairman not to guide while a decision for his moving from office is under consideration.

• Article 289_ Exemption of property and income of a State from Union taxation.

• Article 256, states that 'Every State shall utilize its executive powers in conformity with the laws made by the Parliament and with all the pre-existing laws prevailing in the State.

Q14. Answer: (b) Rs. 650

Given:

Rate of interest for Scheme A (R) = 12% per annum

Rate of interest for Scheme B (R) = 10% per annum

Total Simple Interest = Rs. 125

Formula Used:

SI = (P × R × T)/100

Calculations:

Let the amount invested in Scheme A be 'x' and that invested in Scheme B be 'y' Then, the total annual interest,

(y × 10 × 1)/100 + (x × 12 × 1)/100 = 125

=> (12x + 10y)/100 = 125

=> 6x + 5y = 6250 .....(1)

Again, the amount invested in Scheme B is 12% 'y' and the invested in Scheme B is 'x'.Then, total annual interest at the new rates

(x × 10 × 1)/100 + (y × 12 × 1)/100 = 128

=> (10x + 12y)/100 = 128

=> 5x + 6y = 6400 .....(2)

Adding (1) and (2), we get

=> 11x + 11y = 12650

=> 11(x + y) = 12650

=> x + y = 1150 .....(3)

Subtracting (2) from (1), we get

=> x - y = -150 .....(4)

Adding (3) and (4), we get

=> 2x = (1150 -150)/2 = 500

Putting x = 500 in (3), we get

=> 500 + y = 1150

=> y = Rs. 650

Therefore The amount invested at 10% per annum simple interest originally is 650.

Q15. Answer: (d) NGAMETIC

The logic followed here is:

And

Similarly,

Hence, the correct answer is "option (4): NGAMETIC".

Q16. Answer: (b) Q

According to the given information,

• Fourteenth from right end -

(Left) G 6 & $ 4 Y 8 9 # @ W H 5 % 6 & K 9 @ R 9 4 T & % # U Y 8 $ # Q Y 8 4 $ (Right)

• Ninth to the right of the fourteenth of the right (T)

T & % # U Y 8 $ # Q Y 8 4 $ (Right).

So Q is ninth to the right of the fourteenth from the right end of the given arrangement.

Hence, “2” is the correct answer.

Q17. Answer: (a) Sandstone

The correct answer is Sandstone.

Key Points

• Lion Capital is situated at Sarnath, close by Varanasi.

• It was constructed in 250 BCE.

• It is made up of polished sandstone.

• The Lion Capital of Ashoka is the capital of a column dig out by the Archaeological Survey of India (ASI) in Sarnath, Uttar Pradesh, India exhibiting four Asiatic lions standing back to back on a round abacus.

Additional Information

• Under each lion, the abacus shows a dharma chakra, the Buddhist wheel of the moral law in high relief. In the middle of the chakras, the figure of a lion, an elephant, a bull, and a horse, appear also in high relief.

• The revealing of the model was undertaken by F. O. Oertel in the ASI winter season of 1904–1905.

• In July 1947, Jawaharlal Nehru, the interim prime minister of India, and soon-to-be prime minister of the Dominion of India formally proposed in the Constituent Assembly of India that the wheel on the abacus of the Sarnath capital be the model of the national flag of India and the capital itself without the lotus the state emblem of India.

• The proposal was accepted in December 1947.

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Q18. Answer: (a) 2

EXPLANATION:

1. Only three friends are younger than R.

> R > > >.

2. P is younger than only S.

S > P > R > > >.

3. U is not the youngest. U is younger than T.

S > P > R > T > U > Q.

Therefore, two friends U and Q are smaller than T.

Hence, the correct answer is "2".

Q19. Answer: (a) 7040

Given:

Circumference of the base (C) = 176 cm

Height (h) = 12 cm

Formula used:

Circumference of the base = 2 × π × r

Total surface area (TSA) of cylinder = 2 × π × r × (r + h)

Calculation:

According to the question,

Circumference of the base = 176

176 = 2 × π × r

=> 176 = 2 × 22 / 7 × r

=> 176 × 7 / 2 × 22 = r

=> 8 × 7 / 2 = r

=> r = 56 / 2

=> r = 28

Now T.S.A.:

2 × π × 28 × (28 + 12)

=> 2 × π × 28 × 40

=> 2 × π × 1120

=> 2240 × π = 7040 cm2.

Therefore The Total Surface Area of the cylinder will be 7040 cm^2.

Q20. Answer: (c) 134.10 cm^3

Shortcut Trick

Ratio of Radius (Cylinder : Hemisphere) = (100 + 16 2/3) : 100 = 7 : 6

Volume of Cylinder = Volume of Sphere => π × $R_{(cyl)}^2$ × 21 = 4/3 × π × 7^3

$R_{(cyl)}^2$ = (4 × 343) ÷ (3 × 21) = 196/9 => $R_{(cyl)}$ = 14/3 cm

Since 7 units = 14/3, then 6 units ($R_{(hem)}$) = (14/3 ÷ 7) × 6 = 4 cm

Volume of Hemisphere = 2/3 × 22/7 × 4^3 = 2816/21 ≈ 134.10 cm^3

Therefore The correct answer is 134.10 cm^3.

Alternate Method

Given:

=> Height of cylinder (H) = 21 cm

=> Radius of sphere (R_s) = 7 cm

=> $R_{(cyl)}$ = $R_{(hem)}$ × (1 + 16 2/3%) = $R_{(hem)}$ × (1 + 1/6) = 7/6 × $R_{(hem)}$

Formula Used:

=> Volume of Cylinder = $\pi R^2 H$

=> Volume of Sphere = 4/3 πR^3

=> Volume of Hemisphere = 2/3 πR^3

Calculations:

=> Volume of Cylinder = Volume of Sphere

=> $\pi \times R_{(cyl)}^2 \times 21 = 4/3 \times \pi \times 7^3$

=> $R_{(cyl)}^2 \times 21 = 4/3 \times 343$

=> $R_{(cyl)}^2 = (4 \times 343) \div (3 \times 21) = 1372 \div 63 = 196/9$

=> $R_{(cyl)} = \sqrt{(196/9)} = 14/3$ cm

=> $R_{(hem)} = 6/7 \times R_{(cyl)} = 6/7 \times 14/3 = 4$ cm

=> Volume of Hemisphere = $2/3 \times 22/7 \times 4^3$

=> Volume of Hemisphere = $(2 \times 22 \times 64) \div (3 \times 7) = 2816 \div 21 \approx 134.0952$ cm³

Therefore The correct answer is 134.10 cm³.

Additional Information

Volume of Three-Dimensional Shapes

The volume of a sphere is $4/3\ \pi r^3$, while a hemisphere is exactly half of that, $2/3\ \pi r^3$.

Surface Area of Hemisphere

Curved Surface Area (CSA) = $2\pi r^2$ and Total Surface Area (TSA) = $3\pi r^2$.

Percentage to Fraction Conversion

16 2/3% is a standard fraction equal to 1/6. Increasing a value by 16 2/3% is equivalent to multiplying by (1 + 1/6) = 7/6.

Q21. Answer: (a) Aparna Satheesan

The correct answer is Aparna Satheesan.

Key Points

• The Abhinandan Saroja National Award was begun on the birthday of the legendary Guru Smt. Padma Bhushan Saroja Vaidyanathan for commending the heritage in the field of Indian Classical Dance.

• Aparna Satheesan Receiver of 2021 Abhinandan Saroja National Award by National Institute of Indian Classical Dance.

• Aparna Satheesan, is an internationally praised skilful dancer who instructed in various classical Indian dance forms as Bharatanatyam, Kuchipudi, Mohiniyattom, Kathakali, Ottam Thullal etc.

Additional Information

• Chandrashekhar Kambara is a poet ,five of his books have been rewarded by the Karnataka Sahitya Academy. His well-known play Jokumaraswamy has won the "Kamaladevi Chattopadhyaya Award" of Natya Sangh as the "Best Play of the Year" in India in the year 1975. Another famousplay Jaisidanayaka prevailed the Vardhamaana Prashasti as the "Best Book of the Year" – 1975 in Karnataka.

• Priyadarshan (born 30 January 1957) is an Indian film director, screenwriter and maker who efforts generally in Malayalam and Hindi films.

• Prabha Atre (born 13 September 1932) is an Indian classical caroler from the Kirana gharana.

Q22. Answer: (b) VVHO

The logic followed here is:

Hence, the correct answer is option (2) VVHO.

Q23. Answer: (d) When the number of poor is estimated as the proportion of people below the poverty line

The correct answer is When the number of poor is estimated as the proportion of people below the poverty line.

Key Points

• The headcount ratio (HCR) is the population proportion that survives, or lives, lower than the poverty threshold.

• One of the unpleasant qualities of the headcount ratio is that it disregards the depth of poverty; if the poor become poorer, the headcount index does not change.

• For example, the poverty headcount ratio at the national poverty line in India was last described at 21.9% in 2011.

Additional Information

The Head Count Ratio is planned with the following method.

HCL = Number of people living below the poverty line/Total population of the country.

The Head Count Ratio (HCR) is the percentage of a population that falls below the Poverty Line.

The Head Count Ratio is explained as the proportion of individuals living below the Poverty Line when the number of poor is approximate.

Q24. Answer: (b) 94.2 cm

Given:

Diameter (D) of circle = 30 cm

Formula used:

Circumference of a circle = 2 × π × r

Concept used:

Radius (r) = D/2 = 30/2 = 15 cm

Calculations:

According to the question,

Circumference of a circle,

=> C = 2 × 3.14 × 15

=> C = 30 × 3.14 = 94.2 cm.

Therefore The Circumference of the circle is 94.2 cm.

Q25. Answer: (b) Little Guru

The correct answer is Little Guru.

Key Points

• Sanskrit learning assembles easily with the world's greatest gamified Sanskrit learning App.

• The app developed by Gamapp Sportswizz Tech and encouraged by The Indian Council for Cultural Relations (ICCR) has been named Little Guru.

• It teaches Sanskrit on a communal platform.

• It will help people to understand Sanskrit in a good manner based on competition, games, peer-to-peer communications, etc.

• It will also help a number of students and faculties related with Sanskrit Universities situated all over the world.

Additional Information

• The application is of considerable help to the Indian Diaspora wishing to stay attached to their roots.

• The ICCR has provided scholarships to an additional three hundred Chinese students. The motive of these scholarships is to promote between cultural, cognitive, and academic exchanges India and China.

• The app was established through the celebrations of the 71st Foundation Day of ICCR

Q26. Answer: (a) 2420

Shortcut Trick

Total wage ratio = (Workers × Individual Wage Ratio)

=> Skilled : Semi-skilled : Unskilled = (12 × 9) : (14 × 5) : (10 × 4)

=> Total wage ratio = 108 : 70 : 40 = 54 : 35 : 20

=> 109 units = Rs. 13189 => 1 unit = Rs. 121

=> Unskilled workers share = 20 units × 121 = Rs. 2420

Therefore The correct answer is Rs. 2420.

Alternate Method

Given:

Number of skilled workers = 12

Number of semi-skilled workers = 14

Number of unskilled workers = 10

Ratio of individual wages = 9 : 5 : 4

Total wages = Rs. 13189

Formula Used:

Total Wage = Number of Workers × Individual Wage

Total Wages = Rs. 13189 (109 units)

Skilled

Semi-skilled

Unskilled

54 units

35 units

20 units

1 unit = 13189 ÷ 109 = 121

Unskilled Wages (20 units) = 20 × 121 = Rs. 2420

Calculations:

=> Let the individual wages of skilled, semi-skilled, and unskilled workers be 9x, 5x, and 4x respectively.

=> Total wage of skilled workers = 12 × 9x = 108x

=> Total wage of semi-skilled workers = 14 × 5x = 70x

=> Total wage of unskilled workers = 10 × 4x = 40x

=> Total wages of all workers = 108x + 70x + 40x = 218x

=> According to the question, 218x = 13189

=> x = 13189 ÷ 218 = 60.5

=> Total money earned by 10 unskilled workers = 40x = 40 × 60.5 = 2420

Therefore The correct answer is Rs. 2420.

Additional Information

Work and Wages Principle

Wages are always distributed in proportion to the work done. If individuals work for the same time period, the wages are divided in the ratio of their individual efficiencies.

Group Wages

Total wages of a category = Number of workers in that category × Wage per worker.

Compound Ratio of Wages

If the number of workers in different groups are in the ratio p : q : r and their individual wages are in the ratio a : b : c, then their total wages will be distributed in the ratio pa : qb : rc.

Q27. Answer: (a) n + 4

GIVEN:

n is a positive integer

n is divided by 7, Remainder is 3

CONCEPT USED:

Dividend = Divisor × Quotient + Remainder

CALCULATION:

Let k be any integer.

n = 7k + 3

By trial and error method we have.

Option 1,

n + 4 = 7k + 3 + 4

n + 4 = 7k + 7

when n + 4 is divided by 7, the remainder is 0

Option 2.

n + 3 = 7k + 3 + 3

n + 3 = 7k + 6

when n + 3 is divided by 7, the remainder is 6

Option 3

n + 5 = 7k + 3 + 5

n + 5 = 7k + 8

when n + 5 is divided by 7, the remainder is 8

Option 4

n + 2 = 7k + 3 + 2

n + 2 = 7k + 5

when n + 2 is divided by 7, the remainder is 5

Hence, when (n+ 4) is divided by 7, the remainder is 0.

Q28. Answer: (a) Africa

Correct answer is Africa.

Key Points

• Atlas Mountains, chain of mountain ranges in northwestern Africa, running normally southwest to northeast to form the geologic spine of the countries of the Maghrib (The western region of the Arab world)—Morocco, Algeria, and Tunisia.

• The Atlas Mountain system takes the shape of an increased oblong, enclosing within its ranges an extensive complex of plains

and plateaus.

• The periodic nature of the rains, which fall in torrents, determines the features of drainage in the Atlas.

• The Tell Atlas and the Saharan Atlas merge in the west into the long folds of the Middle Atlas and in the east connect jointly in the Tébessa and Medjerda mountains.

Additional Information

• Mount Elbrus is the highest mountain in Europe.

• Denali in Alaska is the highest mountain peak of North America.

• Mount Everest is a peak in the Himalaya mountain range.

• It is located between Nepal and Tibet, an autonomous region of China.

Q29. Answer: (b) one bit

The correct answer is One bit.

• Memory cells are usually organized in the form of an array, in which each cell is capable of storing one bit of information.

Key Points

• One bit indicates the validity of the page, that is, whether the page is actually loaded in the main memory.

• This bit allows the operating system to invalidate the page without actually removing it.

• Another bit indicates whether the page has been modified during its residency in the memory.

• As in cache memories, this information is needed to determine whether the page should be written back to the disk before it is removed from the main memory to make room for another page.

Additional Information

• The bit is the most basic unit of information in computing and digital communications.

• A byte is a unit of digital information that most commonly consists of eight bits.

• A nibble is four binary digits or half of an eight-bit byte.

Q30. Answer: (a) Mother's father

Preparing the family tree using following symbols:

Hence, the correct answer is "Mother's father".

Prabhakar is the Mother's father of Vipul.

Note: In the given family chart

P is Prabhakar.

R is Rajat.

V is Vipul.

N is Neha.

Q31. Answer: (c) Thursday

Given that:-

No of days from 12^(th) August to 26^(th)September = (31 -12) + 26 = 19 + 26 = 45 days.

Since, it was Monday on 12^(th) August, every 7th day from 12^(th) August will be a Monday.

Thus, no. of odd days = 45/7 = 3.

Now, 12th August (Monday) + 3 odd days = 26th September (Thursday).

26th September will be Thursday.

Hence, "option 3" is the correct answer.

Q32. Answer: (c) Razia Sultana

The correct answer is Razia Sultan.

• Razia Sultana was the first woman Sultanate of India and ruled the court of Delhi from the end of 1236 to 1240.

Key Points

• When Razia Sultan took over the throne on 10 November 1236, with the official name of Jalâlat-ud-Dîn Raziyâ, she made a conscious decision to give up her traditional Muslim woman attire, including the pardah, which invited the fury of conservative Muslims.

• The fifth Mamluk dynasty ruler, history deems Razia Sultan as one of the very few female rulers in the history of Islamic civilizations across the world.

• During her reign, she ordered coins be minted with her title as “Pillar of Women, Queen of the Times, Sultan Razia, daughter of Shamsuddin Iltumish.”

• Razia Sultan fought on the forefront and won battles seizing various territories.

• Her gender was never an excuse. She mastered administration, rubbing shoulders with the best Sultans Delhi had ever been ruled by.

Additional Information

• The Mamluk dynasty was founded in Northern India by Qutb ud-Din Aibak, a Turkic Mamluk slave general of the Ghurid Empire from Central Asia.

• The Mamluk dynasty ruled from 1206 to 1290; it was the first of five unrelated dynasties to rule as the Delhi Sultanate until 1526.

• The Delhi Sultanate was an Islamic empire based in Delhi that stretched over large parts of South Asia for 320 years.

• After the assassination, one of Ghori's slaves, the Turkic Qutb al-Din Aibak, assumed power, becoming the first Sultan of Delhi.

Q33. Answer: (a) Steatite

The correct answer is Steatite.

Key Points

• Standard Harappan seals

• The Indus Valley Civilization created several artefacts and works of literature.

• During the second half of the third millennium BCE, the Indus Valley art form emerged (i.e. from 2500 BC onwards).

• Archaeologists have found thousands of seals in the Harappan sites.

• Steatite, a soft stone, was used to create the majority of the seals.

• Some of them were additionally constructed from gold, terracotta, chert, ivory, faience, and agate.

• The standard Harappan seal had a 2X2 dimension and was square in shape.

• Every seal has a drawing of an animal and writing in pictographic character.

• Primarily, tigers, elephants, bulls, bison, goats, and other animals are represented.

Additional Information

• The majority of seals have writing on both sides.

• The writings have a Kharosthi aesthetic (right to left).

• The Pashupati Seal of the Harappan civilization from Mohenjo Daro is the most well-known seal.

• An elephant, a tiger, a rhino, and a buffalo are positioned to the right and left of the figure, which is seated cross-legged, in the centre of the seal, respectively.

• Various uses of the seal

• The seals are thought to have been used for commercial purposes.

• A few seals were also worn as amulets, possibly serving as a kind of identification.

• Some seals must have been used for educational purposes because they contain mathematical symbols.

Q34. Answer: (b) Tansen

The correct answer is Tansen.

Key Points

• Tansen had learned music from Haridas for eleven years.

• He became a great and famous singer.

• Tansen sang before Emperor Akbar.

• Akbar was so impressed that he asked Tansen to join his court in 1556.

• Tansen became the favourite of the Emperor. Akbar used to visit Tansen’s house to hear him practise music.

• Akbar asked Tansen to sing whenever he had the mood. He also gave Tansen many presents.

• Tansen was one of the nine jewels in Akbar's court.

Additional Information

• Tansen, also remembered as Miyan Tan Sen or Ramtanu Pande was a prominent figure in Hindustani classical music.

• Born in a Hindu brahmin family, he learnt and perfected his art in the northwest region of modern Madhya Pradesh.

• Tansen Samaroh or Tansen Sangeet Samaroh is celebrated every year in the month of December in Behat village of Gwalior district, Madhya Pradesh. It is a 4-day musical extravaganza. Artists and music lovers worldwide gather here to pay tribute to the Great Indian Musical Maestro Tansen.

Q35. Answer: (c) Chennai

The correct answer is Chennai.

• Jitendra Singh launched Samudrayaan, India's first manned ocean mission, at the National Institute of Ocean Technology in Chennai.

Key Points

• Union Minister of State Dr Jitendra Singh launched India's first manned ocean mission, Samudrayaan, at the National Institute of Ocean Technology (NIOT) in Chennai on October 29, 2021.

• With the commencement of the Unique Ocean Mission, India joined the elite group of countries that have specialist technology and vehicles to conduct subsea missions, including the United States, Russia, France, Japan, and China.

• Samudrayaan Mission will open up greater opportunities for growth in the areas of clean energy, drinking water, and the blue economy.

• The Samudrayaan mission is India's first manned ocean mission, with the goal of sending men deep into the ocean in a submersible vehicle for deep-ocean exploration and rare mineral mining.

• The 200-crore Samudrayaan Mission will send three people to a depth of 6000 metres in the sea in a manned submersible vehicle called MATSYA 6000 for deep underwater studies. Submarines have a maximum depth of roughly 200 metres.

Additional Information

• The Unique Ocean Mission aims to have deep underwater manned vehicles for carrying out subsea activities.

• The deepwater manned submersible has been codenamed as the ‘MATSYA 6000’.

• It is developed by the Chennai-based National Institute of Ocean Technology (NIOT).

• The technology will help to conduct deep-ocean exploration of the non-living resources located at a depth of about 1000 and 5500 meters, such as polymetallic manganese nodules, gas hydrates, hydro-thermal sulphides and cobalt crusts.

Q36. Answer: (a) 43/4

Given:

13/6 × {45/26 + 15/13 × (5/7 ÷ 25/14)}

Concept Used:

Calculations:

13/6 × { 119/26 + 15/13 × (5/7 ÷ 25/14)}

13/6 × { 119/26 + 15/13 × (5/7 × 14/25)}

=> 13/6 × {45/26 + 15/13 × 2/5}

=> 13/6 × {45/26 + 30/65}

=> 13/6 × {(225 + 60)/(13 × 5 × 2)} ----(Taking LCM of 26 and 65 = 13 × 5 × 2)

=> 13/6 × 285/130

=> 19/4

Therefore The simplified value of the given equation is 19 / 4 or 43/4.

Q37. Answer: (d) 2/27

Given:

=> 32/46 × 94/576 × 184/282

CONCEPT USED:

Product of fractions.

Calculations:

=> (32/46) x (94/576) x (184/282)

=> (32/576) x (94/282) x (184/46)

=> (1/18) × (1/3) × (4/1)

=> (4/18) × (1/3)

=> (2/9) × (1/3)

=> 2/27

Therefore The value of 32/46 × 94/576 × 184/282 will be (2/27).

Q38. Answer: (c) -, ×, ÷, +, =

Let's check each option:

1. ÷, +,-, ×, =

Given equation: 19 * 5 * 4 * 2 * 4 * 13.

After putting the signs, we get: 19 ÷ 5 + 4 - 2 × 4 = 13

L.H.S = 19 ÷ 5 + 4 - 2 × 4.

= 3.8 + 4 - 2 × 4.

= 3.8 + 4 - 8.

= 4.2 - 8

= - 3.8 ≠ R.H.S.

2. +, ×, -, =, ÷

Given equation: 19 * 5 * 4 * 2 * 4 * 13.

After putting the signs, we get: 19 + 5 × 4 - 2 = 4 ÷ 13

L.H.S = 19 + 5 × 4 - 2.

= 19 + 20 - 2

= 39 - 2

= 37 ≠ R.H.S.

3. -, ×, ÷, +, =

Given equation: 19 * 5 * 4 * 2 * 4 * 13.

After putting the signs, we get: 19 - 5 × 4 ÷ 2 + 4 = 13.

L.H.S = 19 - 5 × 2 + 4

= 19 - 10 + 4

= 19 + 4 - 10

= 23 - 10

= 13 = R.H.S.

Hence, the correct answer is option 3.

Q39. Answer: (b) 9

Given: Few people are sitting in a row facing north.

1. R is sitting 3rd to the left of U.

2. Only two persons are sitting between R and T.

3. Only one person sits to the right of U.

4. Only one person sits between Q and U and only V sits to the left of T

Hence, option (2): 9 people are sitting in the row.

Q40. Answer: (c) Pupa

The correct answer is Pupa.

• The third stage in the lifecycle of a butterfly is called Pupa.

Key Points

• During the third stage, the caterpillar forms a chrysalis (or pupa) which is usually brown or green so it is camouflaged. This is the transformation stage, when it starts to grow wings.

• A pupa is the life stage of some insects undergoing transformation between immature and mature stages. Insects that go through a pupal stage are holometabolous: they go through four distinct stages in their life cycle, the stages thereof being egg, larva, pupa, and imago

• A pupa forms following the completion of larval development and contains the metamorphosing adult.

• During the stage, the caterpillar forms a protective chrysalis that protects it from the outside world while allowing it to undergo important changes.

The caterpillar will stay in this stage for about a week.

Additional Information

• The life cycle of a butterfly is truly amazing. Butterflies have four life stages, the egg, the larva (caterpillar), the pupa (chrysalis), and the adult butterfly.

• Each of the four stages is very unique to individual species of butterflies which is part of what makes watching and raising butterflies so much fun.

• The adult butterfly first lays her eggs safely on a leaf. Depending on the type of butterfly, she may lay just one egg, dozens of eggs, or up to hundreds of eggs at once.

• The egg begins to hatch and a caterpillar is revealed. This caterpillar is known as the larva stage. The caterpillar crawls out of the egg and immediately begins to start eating.

• After about a week later, the caterpillar is ready to emerge from its chrysalis and enter the fourth stage of the life cycle.

Q41. Answer: (b) West

Given,

1. Martin starts walking from his house in east direction.

2. He walks 10m takes a left and walks 12m.

3. Next he takes a right turn and walks 3m.

4. .Then he turns left and walks 1m.

5. He again turns left and walks 5m.

Therefore, he is moving towards "West".

Hence, the correct answer is "West".

Q42. Answer: (a) Vasu

Given: Anshul, Manohar, Pardhu, Vikram, Vasu and Prerna are standing in a circle, facing the centre.

1. Prerna is to the immediate right of Vikram.

2: Manohar is an immediate neighbour of both Vikram and Pardhu.

3: Anshul is an immediate neighbour of both Vasu and Pardhu.

From the figure it can be clearly seen that immediate left of Anshul is Vashu.

Hence, the correct answer is "Vashu".

Q43. Answer: (d) Lord Lytton

The correct answer is Lord Lytton.

Key Points

• The vernacular Press Act proposed by Lord Lytton was intended to prevent the vernacular press from expressing criticism of British policies.

• He also passed the Arms Act 1878 which prohibited Indians from carrying weapons of any kind without licenses. Englishmen were excluded from this act.

• Vernacular Press Act of 1878: disallowing Indians from possessing arms and allowing the government to confiscate newspaper printing assets if anything objectionable was printed against the government.

Additional Information

• Withdrawal of all ordinances issued by the Government of India imposing curbs on the activities of the Indian National Congress.

• Withdrawal of all prosecutions relating to several types of political offences (Rowlatt Act) except those involving violence. Release of prisoners arrested for participating in the Salt March.

• Lord Chelmsford, the Viceroy, produced their scheme of constitutional reforms, known as the Montagu-Chelmsford (or Mont-Ford) Reforms, which led to the enactment of the Government of India Act 1919.

• The Mountbatten plan led to the royal assent for the approval of the Indian Independence Act 1947. Lord Mountbatten, the last Viceroy of India, came up with a plan under which he proposed that the provinces be declared independent successor states.

Q44. Answer: (a) fraccosΘ 2

GIVEN:

(cotθ - 1)over(1- tanθ) ÷ (sinθ/(1 +cosθ) + (1 + cosθ)/sinθ)

FORMULA USED:

cotθ = cosθ /sinθ.

tanθ = sinθ/cosθ.

$\sin^2\theta + \cos^2\theta = 1$.

$(a + b)^2 = a^2 + b^2 + 2ab$.

CALCULATION:

cosθ/sinθ -1over1- sinθ/cosθ ÷ $(\sin^2\theta + (1+ \cos\theta)^2)$over(1+cosθ) sinθ

=> (cosθ - sinθ)over sinθ × cosθ over (cosθ - sinθ) ÷ $(\sin^2\theta + 1 + \cos^2\theta + 2\cos\theta)$ over sinθ(1+ cosθ)

=> cosθ over sinθ ÷ (2+ 2 cosθ)over sinθ (1+ cosθ)

=> cosθ over sinθ ÷ 2 (1+ cosθ)over sinθ (1+ cosθ)

=> cosθ over sinθ × sinθ over 2 = cosθ over2.

Hence, the value is cosθover2..

Q45. Answer: (c) 19.7%

The correct answer is 19.7%.

Key Points

• The birth rate for India in 2020 was 17.592 births per 1000 people, a 1.2% decline from 2019. The birth rate for India in 2019 was 17.806 births per 1000 people, a 1.19% decline from 2018.

• There are 24.02 million births in India in 2021. That is 65,797 per day, which is ranked 1st.

• The crude birth rate is 17.23 per 1000 people.

Additional Information

• The Sample Registration System (SRS) is a large-scale demographic survey for providing reliable annual estimates of Infant mortality rate, birth rate, death rate and other fertility & mortality indicators at the national and sub-national levels.

• The SRS in India is based on a dual record system.

Q46. Answer: (b) 10^5 × 0.083963

Given:

1/11.91 = 0.083963

CONCEPT USED:

Shifting of decimals = divide the number by 10,100,1000..... when one has to shift decimal to left side and multiply by 10,100,1000.....when shifting of decimal has to be done on right side.

Calculations:

1

0.0001191

=> 1

000011.91

100000

=> 1 x 10^5

11.91

According to the question,

=> 0.083963 x 105.

Therefore The value of 1 will be 0.083963 x 105.

0.0001191

Q47. Answer: (b) LR9 : PU55

The pattern observed in the following options:

LOGIC: Alphabets are increased to +4 positional values and the digit is multiplied by 5.

HP7 : LT35

LR9 : PU55

PJ3 : TN15

DL5 : HP25

On observing the options we find out the option which does not follow the pattern which is option 2 (LR9 : PU55.)

Hence, the correct option is LR9 : PU55.

Q48. Answer: (c) 42

GIVEN:

Prime numbers between 20 and 62

CONCEPT USED:

Median = 1/2 [(n/2)th term + (n + 2)/2)th term,] when n is an even number

The prime number are those numbers that have only two factors i.e.1 and themselves.

CALCULATION:

23, 29, 31, 37, 41, 43, 47, 53, 59, 61

Total numbers, n = 10 (even number)

Median = (1/2){(n/2)th term + (n + 2)/2)th term}

=> (n/2)th term = 5th term = 41

=> (n + 2)/2)th term = 6th term = 43

=> 1/2[41 + 43] = 84/2 = 42.

The median of all prime numbers between 20 and 62 is 42.

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Q49. Answer: (c) The coverage of the coronavirus pandemic

The correct answer is The coverage of the coronavirus pandemic.

Key Points

• The Pulitzer Prize is awarded within the United States for excellence in journalism in various categories. It was First awarded in 1917.

• The New York Times won the 'Pulitzer Prize, 2021' in the prestigious public service category for its detailed, data-filled reporting on the pandemic.

Additional Information

• The Pulitzer prize is an award for achievement in newspapers, magazines, online journalism, literature, and musical composition within the United States.

• The Pulitzer prize administration award prize across 22 categories in Journalism, and art each year.

• Columbia University administers it.

Q50. Answer: (c) 100

Shortcut Trick

The required greatest number is the HCF of the numbers obtained after subtracting the respective remainders.

Required Number = HCF of (2307 − 7) and (3105 − 5)

Required Number = HCF of 2300 and 3100

Both 2300 and 3100 are directly divisible by 100, and 23 and 31 are co-prime.

Therefore The correct answer is 100.

Alternate Method

Given:

Dividend numbers = 2307 and 3105

Respective remainders = 7 and 5

Formula Used:

The greatest number that divides x and y leaving remainders a and b respectively is given by the Highest Common Factor (HCF) of (x − a) and (y − b).

Calculations:

=> First resulting number = 2307 − 7 = 2300

=> Second resulting number = 3105 − 5 = 3100

=> Now, find the prime factorization of 2300 and 3100:

=> 2300 = 23 × 100 = 23 × 2^2 × 5^2

=> 3100 = 31 × 100 = 31 × 2^2 × 5^2

=> The common factors between the two prime factorizations are 2^2 and 5^2.

=> HCF = 2^2 × 5^2

=> HCF = 4 × 25 = 100

Therefore The correct answer is 100.

Additional Information

Greatest Number Dividing with Specific Remainders

The greatest number that will divide x, y, and z leaving individual remainders a, b, and c respectively is given by finding the HCF of (x − a), (y − b), and (z − c).

Greatest Number Dividing with Same Remainder

The greatest number that will divide x, y, and z leaving the exact same remainder 'r' in each case is given by finding the HCF of (x − r), (y − r), and (z − r).

Greatest Number Dividing with Unknown Same Remainder

When x, y, and z are divided by the greatest number leaving the same but unknown remainder, the required number is the HCF of the absolute differences: |x − y|, |y − z|, and |z − x|.

Product Rule of LCM and HCF

For any two numbers 'A' and 'B', the product of the given numbers is strictly equal to the product of their LCM and HCF. Rule: A × B = LCM(A, B) × HCF(A, B).

Q51. Answer: (a) -5

Given:

10 - 18 ÷ 3 × 3 + 27 ÷ 32

Concept used:

Calculations:

10 - 18 ÷ 3 × 3 + 27 ÷ 32

=> 10 - 6 × 3 + 27 ÷ 9

=> 10 - 18 + 3

=> 13 - 18 = - 5

Therefore The simplified value of the given equation is - 5.

Q52. Answer: (b) 3

GIVEN:

1/(1 + √2) + 1/(√2 + √3) + 1/(√3 + √4) + · · · + 1/(√15 + √16)

Formula used:

$a^2 - b^2 = (a + b)(a - b)$

CONCEPT USED:

nth term= 1/(√n +√(n+1))

rationalization = process of converting irrational number into rational number.

CALCULATION:

The equation can be re-written as

1/(1 + √2) + 1/(√2 + √3) + 1/(√3 + √4) + · · · + 1/(√16 + √15)

On rationalization ,we get

1/(√2 +1) × (√2 -1)/(√2 -1) + 1/(√3+√2) × (√3 -√2)/(√3 -√2) +.....+ 1/(√16 +√15) × (√16 -√15)/(√16 -√15)

=> √2 -1 + √3 -√2 +.....+ √16 -√15

=> -1 + √16 = (-1 +4) = 3.

=>The positive value is 3.

Q53. Answer: (c) China

The correct answer is China.

Key Points

• Lake Pangong Tso is located in Laddakh union territory and is an endorheic lake in the Himalayas situated at a height of about 4,350m.

• It is geographically situated in a disputed territory claimed both by India and China.

• The lake is about 5 km wide and about 134km long with about 60% of the length extending into Tibet.

Additional Information

• The Bay of Bengal is the northeastern part of the Indian Ocean, bounded on the west and northwest by India, on the north by Bangladesh, and on the east by Myanmar and the Andaman and Nicobar Islands of India.

• There are 56 rivers that flow down from the Himalayan kingdom of Bhutan to the eastern state of Assam in India to meet the Brahmaputra River.

• The Sharda River, also called Kali river and Mahakali River, originates at Kalapani in the Himalayas at an elevation of 3,600 m in the Pithoragarh district in Uttarakhand, India.

Q54. Answer: (b) The receipts of the government which create liability or reduce financial assets

The correct answer is The receipts of the government which creates liability or reduce financial assets.

Key Points

• Capital receipts are the income received by the company which is non-recurring in nature. They are part of the financing and investing activities rather than operating activities.

• They also refer to incoming cash flows. Capital receipts can be both non-debt and debt receipts.

• Loans from the general public, foreign governments and the Reserve Bank of India (RBI) form a crucial part of capital receipts.

• Contributions into the business by the proprietor, loans taken from banks and amount received on issue of share capital are capital receipts.

Additional Information

• Revenue receipts are those receipts that do not lead to a claim on the government.

• They are hence termed non-redeemable.

• They are classified into tax and non-tax revenues.

• Capital receipts are receipts that create liabilities or reduce financial assets.

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• They also refer to incoming cash flows.
• Capital receipts can be both non-debt and debt receipts.

Q55. Answer: (b) Motilal Chimanlal Setalvad

The correct answer is Motilal Chimanlal Setalvad.

Key Points

• M C Setalvad was the first Attorney General of India(1950-63).
• He appeared for the government in a host of important and, at times, controversial cases.
• He was also involved with the Radcliffe Tribunal for demarcation of the Indo-Pak border and several UN proceedings on Kashmir, assignments that required the deft touch of a legal eagle and the principles of a man of conviction.

Additional Information

Attorney General for India

• The Constitution (Article 76) has provided for the office of the Attorney General for India.
• He is the highest law officer in the country.
• The Attorney General (AG) is appointed by the president.
• He must be a person who is qualified to be appointed a judge of the Supreme Court.
• The term of office of the AG is not fixed by the Constitution.
• Current Attorney General of India: R Venkataramani

Q56. Answer: (a) 33 m

Step 1: Point A is 18 m to the east of Point B.
Step 2: Point B is 22 m to the north of Point C.
Step 3: Point D is 11 m to the west of Point C.
Step 4: Point E is 11 m to the south of point D.
Step 5: Point X is 29 m to the east of Point E.
Now the distance between Point A to Point X is same as sum of distance between Point D to Point E & Point B to Point C.
DE = 11 m and BC = 22 m
DE + BC => 11 m + 22 m
Therefore the distance between A and X is 33 m.
Hence, the correct answer is "33m".

Q57. Answer: (a) 78.95

Given:
43240 - 30608 = p × 160
Calculation:
43240 - 30608 = p × 160
=> 12632 = p x 160
=> p = 12632/160
=> p = 78.95
Therefore The value of 'p' is 78.95.

Q58. Answer: (b) Jakson

Given: eight people, including the Principal, are sitting in a square formation facing towards the centre.
Step 1: Bahl is sitting diagonally opposite Nikon.
Step 2: Nikon is sitting to the immediate right of Eva.
Step 3: Pearson is an immediate neighbour of Eva.
Step 4: Pearson is diagonally opposite Charlie.
Step 5: Charlie is seated to the immediate left of the Principal.
Step 6:Philip is not sitting to the immediate right of Bahl.
Step 7:Only three people sit between Philip and Jakson.
From the figure it can be clearly seen that second to the left of Eva is Jackson.
Hence, the correct answer is "Jackson".

Q59. Answer: (a) Decentralised Procurement Scheme

The correct answer is Decentralised Procurement Scheme.

Key Points

• Under Decentralized Procurement Scheme (DCP), food grains is made up and give out by the State Governments themselves.

• Under this scheme, the nominated DCP States procure, store and issue foodgrains under the Targeted Public Distribution System (TPDS) and other welfare schemes of the Central Government of India.

State/UT	DCP adopted for
A&N Islands	Rice
Bihar	Rice/Wheat
Chhattisgarh	Rice/Wheat
Gujarat	Wheat
Karnataka	Rice
Kerala	Rice
Madhya Pradesh	Rice/Wheat
Odisha	Rice
Tamil Nadu	Rice
Uttarakhand	Rice/Wheat
West Bengal	Rice/Wheat
Punjab (for NFSA obligations)	Wheat
Rajasthan (in Alwar District)	Wheat
Andhra Pradesh	Rice
Telangana	Rice

Additional Information

• Minimum support prize are the prices at which the government obtain certain crops from farmers to assure them opposed to any sharp fall in prices.

• Under a centralised procurement scheme, the appointed States procure, store and also issue foodgrains as per allotments indicated by the Central Government under TPDS.

• The prize stabilisation fund is aimed to increase or decrease the low or high prices of such sort out materials by distributing or procuring the material to stabilize the price in a range

Q60. Answer: (b) Brazil

The correct answer is Brazil.

Key Points

• Brazil is the biggest sugarcane manufacturing country in the world followed by India, China and Thailand. Brazil makes around 768 million tonnes of sugarcane annually.

• Sugarcane was an old crop of the Austronesian and Papuan people.

• It was found in Polynesia, Island Melanesia, and Madagascar in prehistoric times via Austronesian sailors.

• Sugarcanes belong to the grass family, Poaceae, an economically main flowering plant family that covers maize, wheat, rice, sorghum, and many forage crops.

Additional Information

• Japan's important agricultural outcome is rice, and most rice eaten in Japan is home-grown.

• China produces several agricultural goods, as well as corn, rice, wheat, soy, cotton, peanuts, and apples.

• India is the world's second-largest maker of rice, wheat, sugarcane, cotton, groundnuts and fruits & vegetables.

Q61. Answer: (b) 182/7

Given:

Time taken to fill a tank by Pipe A = 42 min

Time taken to fill a tank by Pipe B = 56 min

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Time taken to empty a full tank by Pipe C = 84 min

Formula used:

Work = Efficiency × Time

Calculation:

LCM of 42, 56, and 84 is 168

=> Efficiency of A = 168/42 = 4 units/min

=> Efficiency of B = 168/56 = 3 units/min

=> Efficiency of C = 168/84 = 2 units/min

=> Efficiency of B and A together = 4 + 3 = 7 units/min

=> A, B and C opened for 8 min = (7 - 2) × 8 = 40 units

Now, Pipes A and B will fill the remaining empty tank = 168 - 40 = 128

=> Time = 128/7 = 182/7 mins

Therefore Time taken by Pipes A and B to fill the remaining tank will be 128 / 7 mins or 182/7 mins.

Q62. Answer: (c) annually

The correct answer is annually.

Key Points

• The Thrissur Pooram is an annual temple festival clasp in Thrissur, Kerala, India.

• It is a clasp at the Vadakkunnathan (Shiva) Temple in Thrissur annually on Pooram day.

• The day during the moon rises with the Pooram star in the Malayalam Calendar month of Medam.

• The carnival was begun by Raja Rama Varma, Maharaja of Cochin Sakthan Thampuran in 1798.

Additional Information

• However the presiding deity at Thiruvambadi is Lord Krishna, it is the second in the significant deity of Goddess Bhagavati that participates in the pooram.

• There are as well eight other temples participate, but some exclusive rights as part of pooram are vested with Paramekkavu and Thiruvambadi temples.

Q63. Answer: (a) Only expectation II is implicit.

Option 1 is the correct answer.

Statement:

A customer can avail banking services at his/her doorstep.

Expectations:

I. This will create problems for the bank. -

II. Customers would be very happy with the service.

=> II is implicit. The statement implies that one will be happy by availing banking services at his/her doorstep. Clearly, nothing is mentioned about its consequences faced by bank. So, I is not implicit

Hence, only expectation II is implicit.

Q64. Answer: (d) D

Explanation:

1. A ranked higher then F.

2. F ranked lower then E.

3. A ranked lower than E.

Hence,

E > A > F

4. F ranked higher than B and C.

E > A > F > B/C

5. D ranked higher than C and E

D > E > A > F > B/C

D ranked the highest.

Hence, D is the correct answer.

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Q65. Answer: (c) 6

Explanation:

12, 4, 37, 25 = 4

• 12 × 4 = 48 and 37 - 25 = 12

• 48 ÷ 12 = 4

so, 12, 4, 37, 25 = 4

In the same way

2, 36, 87, 51 = 2

• 2 × 36 = 72 and 87 - 51 = 36

• 72 ÷ 36 = 2

Similarly,

• 18 × 3 = 54 and 58 - 49 = 9

• 54 ÷ 9 = 6

18, 3, 58, 49 = 6

Hence, 6 is the correct answer.

Q66. Answer: (b) K

Persons facing North : J, K, L, M, N and O

1) Only three persons are sitting to the left of M and only four persons are sitting to the right of L.

2) N is sitting third to the right of J.

3) O is not sitting at one of the extreme ends.

Hence, K is sitting at the left extreme end.

Q67. Answer: (d) 4

Given:

(34.2 × 6.84) ÷ (102.6 × 0.00171)/((12.5 × 0.8) ÷ 0.03)

Concept used:

Calculation:

(34.2 × 6.84)/(102.6 × 0.00171) ÷ (12.5 × 0.8)/0.03

=> (233.928)/(0.175) × 0.03 ÷ (10)

=> (1336.73) × 0.03 ÷ (10)

=> 40.1/10 = 4.01 ~ 4.

Therefore The value of the given equation is 4.01 ~ 4.

Q68. Answer: (d) China

The correct answer is China.

Key Points

• India beat China, 2-0 to win the bronze medal at the 2022 Women’s Hockey Asia Cup tournament.

• The 2022 Women’s Hockey Asia Cup was the 10th volume of the quadrennial Women’s Hockey Asia Cup.

• The tournament was clasp from January 21 to 28, 2022 at the Sultan Qaboos Sports Complex in Muscat, Oman.

• Japan beat South Korea 4-2 in the final to win their third prize at the Women’s Hockey Asia Cup tournament.

Additional Information

• Asia Cup Hockey 2022: India wins a Bronze medal, beats Japan 1-0.

• Hockey, men's Asia Cup 2022: Korea beat Malaysia for the record-expending 5th prize, and India win bronze.

Q69. Answer: (b) He should be rejected.

Option 2 is the correct answer.

GIVEN INFORMATION:

• Anirudh was born on 12th March 1993.

• He is a marine engineer with 61% marks.

• He has also done an internship for a period of 14 months with a renowned shipping company.

• He has been working as a supervisor in a company for the past 2 years.

• He has secured 80% marks in the common entrance test.

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DETAILED SOLUTION:

There are four requirements for selecting candidates.

A. Should be a marine engineering graduate with a minimum of 65% marks.

=> Anirudh has NOT fulfilled this criteria as he has scored 61% marks whereas the requirement was 65%.

B. Should have done an internship of at least 1 year with some shipping company.

=> He has fulfilled this criteria.

C. Should not be less than 21 years of age and more than 29 years of age as on 1st July 2020.

=> He was born on 12th March 1993. So his age on 1st July 2020 would be 27 years, 3 months, 3 weeks and 5 days. He has fulfilled this criteria.

D. Should have secured a minimum of 75% marks in the common entrance test.

=> He has fulfilled this criteria.

Therefore, he should be rejected as he has not fulfilled the criteria of being a marine engineer with a minimum 65% marks..

Q70. Answer: (c) Director General of the Indian Coast Guard

The correct answer is Director General of the Indian Coast Guard.

Key Points

• The New Delhi exemption on Friday assigns Virender Singh Pathania as the new Director-General of the Indian Coast Guard. Currently, he is working as Additional Director General, Headquarters (New Delhi).

• The Indian Coast Guard (ICG) is the maritime law enforcement and search and rescue agency of India with authority over its territorial waters carry its contiguous zone and exclusive economic zone.

• The Coast Guard Headquarters (CGHQ) is situated at New Delhi.

• Women are elected for the coast guard jobs as officers in general duty only.

Additional Information

• Air Marshal Sanjeev Kapoor has supposed the assignment of Director General (Inspection and Safety) of Indian Air Force at Air HQ New Delhi.

• Air Chief Marshal VR Chaudhari PVSM AVSM VM ADC was ordered into the fighter stream of the Indian Air Force on 29 Dec 1982.

• Air Officer In Charge management or AOA, is a staff role in some air forces, at various organisational levels.

Q71. Answer: (d) MS-Paint

The correct answer is MS-Paint.

Key Points

• MS-Paint is not a component of MS Office 365.

• The main components of MS Office are given below:

• Microsoft Teams,

• Word, Excel.

• Powerpoint.

• Outlook.

• One note.

• One drive.

Additional Information

• Microsoft word is a word processor software developed by Microsoft in 1983.

• OneDrive is the Microsoft cloud service that connects you to all your files. It lets you stock and save your files, share them with others, and get to them from any place on all your devices.

• Microsoft Access is a database management system (DBMS) used to store and manage data.

Q72. Answer: (d) 9

GIVEN:

1 1/4 × (5 3/4 ÷ 2/7 of k) ÷ 2 7/8 - 3 3/4 = (17 - 4) ÷ 2 of 2.

FORMULA USED :

CALCULATION:

5/4 × ((23/4)/(2K/7)) ÷ 23/8 - 15/4 = 13/4

=> 15/4 × (23/4 × 7/2k) ÷ 23/8 - 15/4 = 13/4

=> 5/4 × 161/8k × 8/23 - 15/4 = 13/4

=> 35/4k = 15/4 +13/4

=> 35/4k = 28/4

=> k = 35/28 = 5/4.

Now, putting the value of k in (k + 1)/(k - 1)

=> (5/4 +1) / (5/4 -1) = 9/4 / 1/4 = 9/4 × 4 = 9.

The value of (k + 1)/(k - 1) = 9.

Q73. Answer: (c) 2460

Given:

895.98 +185.01 + 851.86 + 524.09

Concept used:

Closest approximate value :

If after decimal the digit > 5, then add 1 to the digits preceding the decimal

If after decimal the digit < 5, then the digits preceding the decimal remain the same.

CALCULATION:

896 + 185 + 852 + 524 = 2457 ≈ 2460

Hence, the closest approximate value to 2457 is 2460.

Q74. Answer: (b) Venus and Mercury

The correct answer is Venus and Mercury.

Key Points

• Venus and Mercury are the only two planets that don't have a single natural moon orbiting them.

• Mercury, the smallest and deepest planet, has no moons, or at least none that can be determined to a diameter of 1.6 km (1.0 mi).

• Venus also has no moons, however, reports of a moon around Venus have been deliberate since the 17th century.

• Earth has one moon, the biggest moon of some rocky planets in the Solar System.

Additional Information

• Mercury - 0 (moon)

• Venus - 0 (moon)

• Earth - 1 (moon)

• Mars - 2 (moon)

• Jupiter - 95 (moon)

• Saturn - 146 (53 confirmed, 29 provisional) (moon)

• Uranus - 27 (moon)

• Neptune - 14 (moon)

Q75. Answer: (b) 11

The correct answer is 11.

Key Points

• The Council of Scientific and Industrial Research (CSIR) declare Shanti Swarup Bhatnagar Award 2021 for Science & Technology.

• This trophy has been given to 11 scientists from all over the country for their notable donations to science and technology.

• Shanti Swarup Bhatnagar (SSB) trophy has been named following the maker & Director of CSIR, late Dr Shanti Swarup Bhatnagar.

• The names of the receivers are traditionally announced by the Director General on every 26 September, which is the CSIR Foundation Day.

Additional Information

• The prize is divided into seven regulations, namely:

• Biological science

• Chemical Sciences

• Earth, Atmosphere, Ocean and Planetary Sciences

• Engineering Sciences

• Mathematical Sciences

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• Medical Sciences
• Physical Sciences.
• Each discipline can have many winners.
• Up until 2007, the prize money was Rs. 2 lakh (US$2,500) and was increased to Rs. 5 lakh (US$6,300) in 2008.

Q76. Answer: (b) E

People : A, B, C, D, E, F, G, H (Sitting at the table facing the center)

Four of them are sitting at each of the corners and other four are sitting at the exact center of each of the sides.

Detailed solution:

1) G sits at one of the corners of the table and E sits second to the left of G.

2) Now F is not an immediate neighbor of E and only 3 people can sit between F and H. So F and H can sit in these two places as shown.

Case 1 : Case 2 :

3) B sits to the immediate left of H. So case 1 is eliminated.

4) A sits third to the right of C.

5) Thus, D sits between A and B.

Therefore, E sits third to the right of D.

Hence, the correct answer is E.

Q77. Answer: (b) 3/4

Shortcut Trick

Arrange data in ascending order: 98, 108, 122, 134, 156, 194.

Range = Maximum − Minimum = 194 − 98 = 96.

Median (n=6) = Average of 3^(rd) and 4^(th) terms = (122 + 134) ÷ 2 = 128.

Required Value = Range ÷ Median = 96 ÷ 128 = 3/4.

Therefore The correct answer is 3/4.

Alternate Method

Given data: 134, 98, 194, 122, 108, 156

Step 1: Sort the data set: 98, 108, 122, 134, 156, 194.

Step 2: Calculate Range

=> Range = Largest value − Smallest value

=> Range = 194 − 98 = 96

Step 3: Calculate Median

=> Number of observations (n) = 6 (even)

=> Median = [(n/2)^(th) term + (n/2 + 1)^(th) term] ÷ 2

=> Median = [3^(rd) term + 4^(th) term] ÷ 2

=> Median = (122 + 134) ÷ 2 = 256 ÷ 2 = 128

Step 4: Calculate Range ÷ Median

=> Ratio = 96 ÷ 128

=> Ratio = (32 × 3) ÷ (32 × 4)

=> Ratio = 3/4

Therefore The correct answer is 3/4.

Additional Information

Median for Even and Odd Data

For odd n, Median = ((n+1)/2)^(th) term. For even n, Median = average of (n/2)^(th) and (n/2+1)^(th) terms.

Range in Statistics

The Range is the simplest measure of dispersion and is calculated as the difference between the Maximum and Minimum observations.

Coefficient of Range

Coefficient of Range = (Max − Min) ÷ (Max + Min). It is a relative measure of dispersion.

Q78. Answer: (a) 26 days

Given:

Radhika can complete a work in 15 days

Rishi can complete the same work in 30 days.

Concept used:

Work = Efficiency × Time

Calculations:

According to the question,

=> Efficiency of Radhika = 1/15

=> Efficiency of Rishi = 1/30

=> Work done by Radhika in 2 days = 1/15 × 2 = 2/15.

Assuming total work to be 1 then,

=> Work remaining after 2 days = 1 - 2/15 = 13/15

Now Time taken by Rishi to complete the remaining work,

=> 13/15 = 1/30 × T

=> T = (13/15) × 30 = 26 days

Therefore Rishi will complete the remaining work in 26 days.

Q79. Answer: (b) Emily

People facing North : Amelia, Olivia, Isha, Emily, Poppy and Jessica.

1) Both Poppy and Jessica have two persons sitting on one of their sides and three persons on the other side.

2) Both Amelia and Olivia are sitting on one of the extreme ends each.

Case 1 :

Case 2 :

3) Isha is sitting to the immediate left of Amelia. (So case 1 is eliminated)

Therefore, Emily sits to the immediate right of Olivia.

Hence, the correct answer is "Emily".

Q80. Answer: (a) Only conclusion I follows

The least possible Venn Diagram is as follows :

Conclusions:

(I) Some bags are laptops → True (It is possible since some bags are notebooks and all notebooks are laptops)

(II) No bag is a laptop → False (It is possible but not definite)

Hence, only conclusion I follows.

Q81. Answer: (a) PATLI

Table of alphabet positional value is as follows:

'MONTH' is written as 'OMPHT'

'MARCH' is written as 'AMTHC'

Similarly,

'APRIL' is written as 'PATLI'

Hence, PATLI is the correct answer.

Q82. Answer: (a) Rs. 8640

Given:

Principle (P) = Rs. 5000

Rate of interest (R) = 20% per annum

Time period (T) = 3 years

Formula used:

Amount = P (1 + R/100)^T.

Calculation:

Amount = $5000(1 + 20/100)^3$

=> $5000 (1 + 1/5)^3$

=> 5000 × $(6/5)^3$

=> 5000 × 216/125

=> 40 × 216 = Rs. 8640.

Therefore The amount received after 3 years will be Rs. 8640.

Q83. Answer: (b) Antibiotic

The correct answer is Antibiotic.

Key Points

• Antibiotics are used to treat or stop some kinds of bacterial infections. They work by killing bacteria or stopping them from reproducing and lay out.

• Antibiotics either kill bacteria or end them multiplying.

• Antibiotics aids the body's immune system to fight bacteria.

• Bacterial infections are frequently treated with topical antibiotics put in directly to the skin or with oral antibiotics.

Additional Information

• Anaesthetic, also spelt anaesthetic, is any representative that produces a local or common loss of sensation, counting pain.

• An antiseptic is a material that stops or hang up the growth of microorganisms.

• Antipyretic is a negotiator that reduces fever.

Q84. Answer: (b) Kolleru Lake - Maharashtra

The correct answer is Kolleru Lake -Maharashtra.

Key Points

• Kollerru Lake is not situated in Maharashtra it is basically situated in Andhra Pradesh.

• It lies between the Godavari and Krishna river deltas near the city of Eluru.

• It is also called Colair Lake.

• Pulicat is a saltwater lake in Andhra Pradesh.

Additional Information

• Important Facts about Andhra Pardesh as per 2022.

• Chief Minister: Yeduguri Sandinti Jagan Mohan Reddy

• Governor : Biswabhusan Harichandan

• State Bird: Indian Roller.

• State Animal: Black Buck.

• State Tree: Neem.

• Language: Telugu, English.

Q85. Answer: (b) Krishnamachari Report

The correct answer is the Krishnamachari report.

Key Points

• Rao Bahadur Sir Vangal Thiruvenkatachari Krishnamachari KCSI, KCIE (8 February 1881 – 14 February 1964) was an Indian civil servant and administrator.

• He served as the Diwan of Baroda from 1927 to 1944, Prime Minister of Jaipur State from 1946 to 1949, and as a member of the Rajya Sabha from 1961 to 1964.

• He was staunch in his support for the major Indian Princely states to join the Indian Union.

• The Krishnamachari Report was focused on Agricultural prices.

Additional Information

• Gadgil Report: To assess the status of ecology, and demarcate areas within the Western Ghats Region for notifying ecologically sensitive zones under the Environment (Protection) Act, 1986.

• Saraiya Committee:

• The committee presented a report on Cooperatives.

• He found cooperative societies to be the most suitable medium for the democratization of economic planning and examined each area of economic development.

• Kheragat Report: The report focused on Agricultural Development

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Q86. Answer: (c) Samarth Ramdas

Correct answer is Samarth Ramdas.

Key Points

• Samarth Ramdas (c. 1608 - c. 1681), also popular as Sant (saint) Ramdas.

• Ramdas Swami was an Indian Hindu saint, philosopher, poet, writer and spiritual master.

• He was a devotee of the Hindu deities Rama and Hanuman.

• His literary works include Dasbodh, Karunashtakas, Sunderkand, Yuddhakand, Poorvarambh, Antarbhav, Aatmaaram, Chaturthman, Panchman, Manpanchak, Janaswabhawgosavi, Panchsamasi, Saptsamasi, Sagundhyan, Nirgundhyan, Junatpurush, Shadripunirupan, Panchikaranyog, Manache Shlok and Shreemad Dasbodh.

Additional Information

• Ramanujacharya was an Indian Hindu philosopher, guru and a social reformer.

• Chaitanya Mahaprabhu was a 15th-century Indian saint who is considered to be the combined avatar of Radha and Krishna by his disciples and various scriptures.

Q87. Answer: (a) C

The first half of the English alphabet are:

A B C D E F G H I J K L M

The second half of the English alphabet are:

N O P Q R S T U V W X Y Z

The second half is written first followed by the first half then the series will be:

N O P Q R S T U V W X Y Z A B C D E F G H I J K L M

The 11^(th) letter from the left is X and fifth place from X is C.

Hence, C is the correct answer.

Q88. Answer: (a) Teesta

Correct answer is Teesta.

Key Points

• Teesta River is a 414 km (257 mi) long river that rises in the Pauhunri Mountain of eastern Himalayas.

• Flows through the Indian states of Sikkim and West Bengal through Bangladesh and enters the Bay of Bengal.

• It drains an area of 12,540 km² (4,840 sq mi).

• In India, it flows through Mangan District, Gangtok District, Pakyong District, Kalimpong district, Darjeeling District, Jalpaiguri District, Cooch Behar districts and the cities of Rangpo, Jalpaiguri and Mekhliganj.

Additional Information

• Damodar River is a river flowing over the Indian states of Jharkhand and West Bengal.

• Dhansiri is the key river of Golaghat District of Assam and the Chümoukedima District and Dimapur District of Nagaland.

• The Ghaggar-Hakra River is an intermittent river in India and Pakistan that flows only during the monsoon season.

Q89. Answer: (a) 8

Given:

A man selling 15 lemons for Rs. 3 and gains by = 60%.

Formula :

CP = SP × 100/(100+gain%)

Calculation :

Selling price of 15 lemons = Rs. 3

Selling price of 1 lemon = 3/15 = Rs. 1/5

Cost price of 1 lemon = 1/5×100/160=Rs. 1/8

Therefore, cost of 8 lemons is Rs. 1

Therefore The man bought 8 lemons for 1 rupee.

Q90. Answer: (a) foreign exchange rate

Correct answer is Foreign exchange rate.

Key Points

• The exchange rate is the price of one currency in terms of another currency.

• Exchange rates can be either fixed or floating.

• Fixed exchange rates are decided by central banks of a country whereas floating exchange rates are decided by the mechanism of market demand and supply.

• Exchange rates are defined as the price that one nation or economic zone's currency can be exchanged for another currency.

Additional Information

• If a country imports more than it exports, there is relatively less demand for its currency, so prices should decline.

• If a country exports more than it imports, there is a high demand for its goods, and thus for its currency.

• In international finance, a world currency, supranational currency, or global currency is a currency that would be transacted internationally, with no set borders.

Q91. Answer: (c) B

Option 3 is the correct answer.

Persons: A, B, C, D, E and F

1) Only one person likes the colour Black.

Persons	Case1	Case2	Case3	Case4	Case5	Case6
A	Black					
B		Black				
C			Black			
D				Black		
E					Black	
F						Black

2) D likes the colour Pink. Neither A nor E likes the colour Black. (So case 1,4 and 5 are eliminated)

3) Among them, only two study in class 12^(th), while the rest study in class 10^(th). Only C is in the same class as F. (Thus, C and F studies in class 12^(th))

None of those studying in 12th like the colour Black. (So case 3 and 6 are also eliminated)

Persons	Case2
A	10^(th)
B	10^(th)-Black
C	12^(th)
D	10^(th)-Pink
E	10^(th)
F	12^(th)

Hence, B likes the colour Black.

Q92. Answer: (c) Newfoundland

Correct answer is Newfoundland.

Key Points

• Grand Bank near the North American coast in Atlantic Ocean, Dogger Bank near the European coast and the warm Gulf Stream and the cold Labrador currents meet near the Newfoundland island are some of the examples.

• The Gulf Stream is a strong ocean current that brings warm water from the Gulf of Mexico into the Atlantic Ocean.

• It extends all the way up the eastern coast of the United States and Canada.

• The Gulf Stream is a strong ocean current that brings warm water from the Gulf of Mexico into the Atlantic Ocean.

Additional Information

• The Falkland Islands are a United Kingdom Overseas Territory by choice.

• The West Coast Region, located along the South-West Coast of South Africa.

• The Oyashio Current is a cold current that originates in the Arctic Ocean.

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Q93. Answer: (b) 24 mins

Shortcut TrickRequired time for the stoppage per hour = Difference of speed/speed without stoppage

Speed of the bus (excluding stoppages) = 45 km/h

Speed of the bus (including stoppages) = 27 km/h

Required time for the stoppage per hour = (45 - 27)/45 = 18/45 = 2/5 × 60 = 24 minutes.

Therefore The bus stops per hour for 24 min.

Alternate MethodGiven:

Speed (S1) of the bus (excluding stoppages) = 45 km/h

Speed (S2) of the bus (including stoppages) = 27 km/h

Formula used:

S = D/T

Where, S = Speed, D = Distance, T = Time

Calculations :

The average speed (including stoppages) = 27 km/h

=> D = S2 × T1

=> Distance travelled in 1 hour = 27 km

The average speed (excluding stoppages) = 45 km/h

=> Time taken (T2) by bus to travel 27 km

=> 27/45 = 0.6 hours = 0.6 × 60 = 36 minutes

Total time (T) bus to stops per hour

=> T = T1- T2

=> T = 60 - 36 = 24 minutes

Therefore The bus stops per hour for 24 min.

HintFind the distance travelled by the bus when stoppages are included.

Q94. Answer: (b) FMT

The pattern followed is :

Similarly,

Hence, the correct answer is FMT.

Q95. Answer: (a) Violinist

Correct answer is Violinist.

Key Points

• Dr Lakshminarayana Subramaniam is an Indian violinist.

• He was honoured with the title “Violin Chakravarthy” (emperor of the violin).

• He has received several awards and honours, including the coveted Padma Bhushan and Sangeet Natak Akademi Award for “The Most Creative Artist” from the President of India.

Additional Information

• Pianist is an individual musician who plays the piano.

• sitarist (plural sitarists) Someone who plays a sitar.

• Guitarist a person who plays the guitar.

Q96. Answer: (a) Sattriya

Correct answer is Sattriya.

Key Points

• Sattriya or Sattriya Nritya, is a major Indian classical dance.

• It is a dance-drama performance art.

• origins in the Krishna-centered Vaishnavism monasteries of Assam, and attributed to the 15th century Bhakti movement scholar and saint Mahapurush Srimanta Sankardev.

• Additional Information

• Mohiniyattam's roots, like all classical Indian dances, are in the Natya Shastra.

• Bharatanatyam is used to express Hindu religious stories and devotions.

• Kathakali is a major form of classical Indian dance.

Q97. Answer: (a) 240 m

Given :

Speed (S) of the train = 72 km/h

Time (T) taken to cross post = 12 seconds

Formula used:

S = D/T

Concept used :

Convert the speed of the train from km/h to m/s.

=> S = 72 × 1000/3600 = 72 × 5/18

=> 4 x 5 = 20 m/s

Calculation :

According to the question,

=> 20 = D/12

=> D = 20 x 12

=> D = 240 m.

Therefore The length of the train is 240 m.

Key Points

Assume the train is stationary and the post is moving at a speed of 72 km/h and the length of the train is the distance traveled by the post.

Q98. Answer: (a) 4

Given:

Coordinates (3, 2) = x = 3, y = 2

kx - 3y = 6

Calculation:

According to the question, :

=> kx - 3y = 6

=> k (3) - 3 x 2 = 6

=> 3k – 6 = 6

=> k = 12/3 = 4

Therefore The value of k is 4.

Q99. Answer: (a) 162.5

Given:

24% of a number is 39

Calculation:

Let the unknown number be 'A'

Then, According to the question,

=> 24% ×A = 39

=> (24/100) ×A = 39

=> A = 39/(24/100)

=> A = 39/24 × 100

=> A = 1.625×100 () = 162.5

Therefore The number is 162.5.

Q100. Answer: (d) 207

Calculation:

The series follows the following pattern :

=> 6 × 2 - 1 = 11

=> 11 × 2 - 3 = 19

=> 19 × 2 - 5 = 33

=> 33 × 2 - 7 = 59

=> 59 × 2 - 9 = 109

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=> 109 × 2 - 11 = 207

Hence, the correct answer is 207.

Q101. Answer: (b) Only conclusion III follows.

The least possible Venn diagram is given below

Conclusions:

I. No dog is a rat - Does not follow → (As, all cats are rats and no dog is a cat. So, it is still possible that some dogs are rats.)

II. No rat is a dog - Does not follow → (As, all cats are dog and no dog are rats. So no rat is a dog is not definite true)

III. Some rats are cats - Follow → (As, all cat are rats. So, some rats are cats is definite true)

IV. All rats are cats - Does not follow → (As, all cat are rats. So, all rats are cats is not definite true)

Hence, the correct answer is "Only conclusion III follows".

Q102. Answer: (b) Tawang Monastery

The correct answer is Tawang Monastery.

Key Points.

• Tawang Monastery is the second biggest and oldest in Asia and is known as the Tawang Ganden Namgyal Lhatse.

• Tawang Monastery, located in Tawang city of Tawang district in the Indian state of Arunachal Pradesh, is the largest monastery in India.

Additional Information

• Diskit Monastery

• It is also known as Deskit Gompa or Diskit Gompa is the oldest and largest Buddhist monastery (gompa) in the Nubra Valley of Ladakh, northern India

• Hemis Monastery

• It is situated around 45 kms to the south of Leh on the western banks of the Indus River.

• The Hemis Monastery is the biggest and very richly endowed monastery of Laddakh.

• It was built in 1630.

• Thiksey Monastery

• Thikse Gompa or Thikse Monastery is a gompa affiliated with the Gelug sect of Tibetan Buddhism

Q103. Answer: (c) 24√3

Given:

Two equal circles, each having a Radius (R) of 24 cm.

Concept used:

Pythagorean Theorem = $(\text{Hypotenuse})^2 = (\text{Perpendicular})^2 + (\text{Base})^2$

Calculations:

According to the question,

OA = 24, OE = 1/2 OC = R/2,

=> $(OA)^2 = (EA)^2 + (OE)^2$

=> (EA)2 = (OA)2 - (OE)2

=> (EA)2 = (R)2 - (R/2)2

=> (EA)2 = R2 - R2/4

=> EA = √(3/4)R2

=> EA = √3R/2

Now the length of AB,

=> AB = 2 × EA = 2 × √3R/2

=> AB = R√3 = 24√3

Therefore The length of the common chord is 24√3.

Q104. Answer: (a) UI51

The position of letters according to the English alphabet series:

The pattern followed here is as follows:

HR12 : MY36

EJ14 : JQ42

Similarly,

PB17 : ?

Hence, the correct answer is "UI51".

Q105. Answer: (c) 0.88 m²

Shortcut Trick

Curved Surface Area (CSA) of a cylinder = 2 × π × r × h

Given: r = 0.2 m, h = 0.7 m, π = 22/7

CSA = 2 × (22/7) × 0.2 × 0.7

CSA = 44 × 0.2 × 0.1 = 44 × 0.02 = 0.88 m²

Therefore The correct answer is 0.88 m².

Alternate Method

Given:

Radius (r) of the cylinder = 0.2 m

Height (h) of the cylinder = 0.7 m

Value of π = 22/7

Formula Used:

Curved Surface Area (CSA) = 2 × π × r × h

Calculations:

=> CSA = 2 × (22/7) × 0.2 × 0.7

=> CSA = 2 × 22 × 0.2 × (0.7 ÷ 7)

=> CSA = 44 × 0.2 × 0.1

=> CSA = 8.8 × 0.1

=> CSA = 0.88 m²

Therefore The correct answer is 0.88 m².

Additional Information

Total Surface Area (TSA) of a Cylinder

The TSA includes the curved surface area and the area of the two circular bases: TSA = 2πr(r + h).

Volume of a Cylinder

The volume measures the space occupied by the cylinder: Volume = πr²h.

Base Area

The area of each circular base is given by the formula: Area = πr².

Q106. Answer: (c) East

According to given conditions,

Clearly, C is to the east of M.

Hence, East is the correct answer.

Q107. Answer: (d) All statements I, II and III together are sufficient.

Given:

Statement I: Sreeja's rank is 2nd.

Statement II: Aman ranked one rank below Sreeja. It means his rank is 3rd.

Statement III: Rohit ranked better than Aman. It means his rank is 1st.

Hence, All statements I, II and III together are sufficient.

Q108. Answer: (d) Telangana

The correct answer is Telangana.

Key Points

• The festival of flowers Bathukamma is a festival of Telangana.

• Bathukamma is a colorful and vibrant festival of Telangana and celebrated by women, with flowers that grow exclusively in each region.

• This festival is a symbol of Telangana's cultural identity.

• Bathukamma comes during the latter half of monsoon, before the onset of winter.

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Additional Information

• The most popular festival celebrated in West Bengal is Durga Puja where all the people come out in the streets and celebrate this four-day festival.

• Garia puja is the famous festival of Tripura.

• Rann Utsav is the famous festival of Gujrat.

Q109. Answer: (b) Article 23

The correct answer is Article 23.

Key Points

• Human trafficking

• Human trafficking involves the exploitation of others for one's own gain or for money.

• The victims are put through fraud or compulsion in order to engage in commercial sex, debt slavery, or forced labour.

• The Indian Constitution's Articles 23 and 24 provide the right against exploitation.

• These crucial fundamental rights guarantee that no citizen will be subjected to any form of forced labour.

• Article 23 (1) of the Indian Constitution forbids the trafficking of Human Beings or Persons.

• In Article 23(1) it is stated that trafficking in human beings, begging for money, and other similar types of forced labour are forbidden, and any violation of this rule is a crime subject to legal sanctions.

• According to Article 24, no kid under the age of fourteen may work in any dangerous occupation, such as a mine or a factory.

Additional Information

• Human trafficking laws in India

• Indian Penal Code, 1860

• The Indian Penal Code, 1860 governs how human trafficking is generally dealt with in India.

• Immortal Traffic (Prevention) Act, 1956 (ITPA)

• Criminal Law (Amendment) Act, 2013

• Protection of Children from Sexual Offences (POCSO) Act, 2012

• Other special laws against trafficking in children and women have been passed such as the Child Labor (Prohibition and Regulation) Act of 1986, Prohibition of Child Marriage Act of 2006, Transplantation of Human Organs Act of 1994, and Bonded Labor System (Abolition) Act of 1976.

• According to Article 21, the State may not take away someone's life or personal liberty unless it follows a certain legal process.

• The protection against arrest and detention in specific circumstances is covered by Article 22.

Q110. Answer: (c) MD

The code for each word is shown below:

Hence, the code for "Red" is "MD".

Q111. Answer: (b) SUY

The position of letters according to the English alphabet series.

The pattern followed here is as follows:

Hence, the correct answer is SUY.

Q112. Answer: (d) Uttar Pradesh

The correct answer is Uttar Pradesh.

Key Points

• Census of India 2011

• In 2011, the Indian state of Uttar Pradesh had the highest number of rural inhabitants.

• It has a 155 million rural population. It is 18.6 % of the total rural population of India.

• Bihar stood second in line with approximately 92 million people living in the rural areas during the same time period.

• According to the 2011 census, 68.84 % population in India lives in rural areas.

Additional Information

• The state of Maharashtra had the highest population with over 50 million people living in urban areas.

• According to the 2011 census, 68.84 % population in India lives in rural areas.

• The level of urbanization increased from 27.81% in the 2001 Census to 31.16% in the 2011 Census, while the proportion of the rural population declined from 72.19% to 68.84%.

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Q113. Answer: (a) 5 and 20

Given:

Among two students one of them secured 15 marks more than the other and his marks were 80% of the sum of their marks.

Concept Used:

Concept of the linear equation of one variable.

Calculation:

Let, one of them scored x

Then the score of the other student is (x + 15)

Sum of their marks = (x + x + 15) = (2x + 15)

Accordingly,

(x + 15) = (80/100) × (2x + 15)

=> 5 × (x + 15) = 4 × (2x + 15)

=> 5x + 75 = 8x + 60

=> (8x - 5x) = (75 - 60)

=> 3x = 15

=> x = 5

The number secured by the other student,

=> 5 + 15 = 20

Therefore The marks obtained by them are 5 and 20.

Q114. Answer: (d) Stratosphere

The correct answer is Stratosphere.

Key Points

• Stratosphere

• The Stratosphere, the second layer of the atmosphere, contains the greatest concentration of ozone molecules (approximately 90%).

• The "ozone layer" is the area in the stratosphere with the highest ozone content.

• The ozone layer, which is naturally present 6 to 30 miles above the Earth's surface, protects life on the planet from the damaging effects of ultraviolet radiation from the sun.

• Three oxygen atoms are present in the molecule of ozone (O3).

• The natural quantity of ozone in the stratosphere is a result of a balance between sunlight, which produces ozone, and chemical processes, which destroy it.

• Ozone molecules are continuously generated and destroyed in the stratosphere.

• The Troposphere, Stratosphere, Mesosphere, and Ionosphere are the four atmospheric layers that make up the atmosphere.

Additional Information

• Troposphere:

• All of Earth's weather occurs in the troposphere, which is the lowest part of the atmosphere.

• The troposphere is bounded on top by the tropopause, a layer of air that separates the troposphere from the stratosphere, and on the bottom it is bounded by the Earth's surface.

• Mesosphere:

• The mesosphere lies below the thermosphere and directly above the stratosphere.

• It covers a distance of between 31 and 53 miles above our planet.

• The mesosphere's temperature drops with altitude.

• Thermosphere:

• It is located directly above the mesosphere and below the exosphere.

• The thermosphere makes up the majority of the ionosphere because ultraviolet energy inside this layer of the atmosphere promotes photoionization/photodissociation of molecules, creating ions.

Q115. Answer: (b) equals aggregate demand

The correct solution is equal aggregate demand.

Key Points

• Equilibrium national income

• The total quantity of new "final" goods and services created over time, often measured annually and quarterly, is a country's

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national income.

• When the level of national output (usually measured as Gross Domestic Product, or GDP), stays stable throughout time, it is said to be in a state of national income equilibrium.

• There are two ways to think about GDP equilibrium:

• First, a stable GDP will happen when an economy's aggregate supply (AS) and aggregate demand (AD) are exactly balanced; and

• Second, when new spending inputs into the circular flow of income (J) equal leakages or withdrawals (W) from the circular flow of income, resulting in: when AD=AS and W=J, GDP (Y) occurs

• Commonly, the price level is used to model national income, which includes employing the aggregate demand-aggregate supply model (AD-AS model).

• This implies that a price level will exist when aggregate demand and short-term aggregate supply are equal.

Additional Information

• Aggregate supply is positively related to price level and aggregate demand is inversely related.

• At 250, equilibrium is a Y=100,condition where AD = AS.

• Following a shift in AD or AS, equilibrium national income (or "Y"), can alter (or in J or W).

• Assuming a steady price level, AD can move to the right, signalling an increase, if one of its components rises.

• This can include rising personal consumption, investment, public spending, or exports.

• If there is an improvement in productivity, a decrease in costs, or a rise in the currency rate, AS can grow on the supply side.

Q116. Answer: (a) Pfizer Inc.

The correct answer is Pfizer Inc.

Key Points

• Pfizer chief Albert Bourla

• Albert Bourla, Chairman and CEO of the multinational pharmaceutical company Pfizer Inc., received the prestigious Genesis Prize 2022 on January 19, 2022.

• He received recognition for his work overseeing the creation of the Pfizer-BioNTech COVID-19 vaccine.

• Each year, a recipient of the $1 million award is recognised for their professional accomplishments, humanitarian efforts, and dedication to Jewish ideals.

• According to the Genesis Prize Foundation, Mr Bourla won the most votes during an online voting process that involved almost 200,000 participants from 71 different countries.

• Dr. Bourla requested that The Genesis Prize Foundation utilise his $1 million award to create a Holocaust museum in Thessaloniki, Greece, where he was born.

• The "Jewish Nobel Prize" is how people commonly refer to it.

Additional Information

• The Jewish Agency Chairman's Office (a nonprofit organisation with strong ties to the Israeli government) and the private Genesis Prize Foundation, jointly administer the prize, which was established in 2014.

• A $100 million endowment created for it provides the funding for this prize.

• According to the organisation, the Greek-born Bourla, who is the son of Holocaust survivors, wishes to contribute his award money to programs focused on preserving the memory of Holocaust victims, particularly in Greece.

• Pfizer's partner, BioNTech, secured funds from the German government, and Pfizer subsequently signed a major supply agreement with the United States.

• The strategy placed Pfizer in the frontline of international efforts to fight the coronavirus, and its vaccine was the first to be approved for use in the United States and Europe.

Q117. Answer: (c) 6

Shortcut Trick

Total sum of 4 observations = Mean × Count = 12 × 4 = 48.

Sum of known numbers = 14 + 6 + 16 = 36.

Value of 2a = 48 − 36 = 12.

Value of a = 12 ÷ 2 = 6.

Therefore The correct answer is 6.

Alternate Method

Given: Observations = 14, 6, 2a, 16; Mean = 12; Number of observations (n) = 4.

Formula: Mean = (Sum of all observations) ÷ n

=> 12 = (14 + 6 + 2a + 16) ÷ 4

=> 12 × 4 = 36 + 2a

=> 48 = 36 + 2a

=> 2a = 48 − 36

=> 2a = 12

=> a = 12 ÷ 2

=> a = 6

Therefore The correct answer is 6.

Additional Information

Arithmetic Mean

The arithmetic mean

Q118. Answer: (d) Tamil Nadu

The correct answer is Tamil Nadu.

Key Points

• R. Nagaswamy

• The son of Sanskrit scholar Ramachandran Sastrigal, archaeologist R. Nagaswamy was born on August 10, 1930.

• Nagaswamy completed his PhD from the University of Poona in both art and archaeology.

• He received training in archaeology from the Archaeological Survey of India (ASI).

• In 1959 he began working as the curator of art and archaeology at the Government Museum in Chennai.

• Ramachandran Nagaswamy, an Indian historian, archaeologist, and epigraphist, lived from 10 August 1930 to 23 January 2022.

• He is most recognised for his research on Tamil Nadu's temple inscriptions and art history.

• He had extensive knowledge of Chola bronzes.

Additional Information

• In 1966, Nagaswamy was appointed the first director of the Tamil Nadu Archaeology Department, a position he held until 1988.

• In 1980, he also started the yearly Chidambaram Natyanjali event.

• He received the Padma Bhushan, India's third-highest civilian honour, in 2018.

• The Tamil Nadu government honoured Nagaswamy with the Kalaimamani award for his contribution to Sekkilar's Periyapuranam.

• Through the distribution of pocket book guides, he made archaeology a popular subject in Tamil Nadu, especially among kids.

Q119. Answer: (c) 44 cm

Shortcut Trick

Area of Rhombus = (1/2) × d1 × d2

440 = (1/2) × 20 × d2

440 = 10 × d2

d2 = 44 cm

Therefore The correct answer is 44 cm.

Alternate Method

Given:

Area of the rhombus = 440 cm2

Diagonal A = 20 cm

Diagonal B = ?

Formula Used:

Area of a rhombus:

=> 1/2 × (Product of the lengths of the diagonals)

=> 1/2 × A × B

Calculation:

According to the question,

Area of the rhombus

=> 440 = 1/2 × 20 × B

=> 440 × 2 = 20 × B

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=> 880 = 20 × B

=> B = 880 / 20

=> B = 44 cm

Therefore The length of the other diagonal is 44 cm.

Additional Information

Properties of Rhombus

A rhombus is a quadrilateral where all four sides are equal. The diagonals bisect each other at right angles (90°).

Side and Diagonal Relationship

If 'a' is the side and d1, d2 are diagonals, then $4a^2 = d1^2 + d2^2$.

Perimeter of Rhombus

The perimeter of a rhombus is given by the formula P = 4 × side.

Q120. Answer: (d) 6 : 5

Given:

Calculation:

According to the question,

Total no. of students enrolled = College A + College B + College C + College D + College E

=> 45 + 52 + 48 + 40 + 55 = 240 students

Total no. of students qualified = College A + College B + College C + College D + College E

=> 38 + 40 + 42 + 32 + 48 = 200 students

Now the ratio of enrolled to qualified students across all colleges,

=> (Total no. of students enrolled/(Total no. of students qualified)

=> 240/200 = 6/5 = 6 : 5

Therefore The ratio of enrolled to qualified students across all colleges is 6 : 5.

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