RRB NTPC CBT 2 (Level-5) Official Paper (Held On: 12 June 2022 Shift 2) (Previous Year Paper)

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

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FULL TEST

Q1. In a row of 28 students, Jamuna was 12^(th) from the extreme left end and Ganga was 19^(th) from the extreme right end. If Sarasvati was seated exactly between them, then what was Sarasvati's position from the right end? Assume that the students were seated facing north.

(a) 17^(th)
(b) 16^(th)
(c) 20^(th)
(d) 18^(th)

Q2. Six identical boxes of different colours, Purple, Black, Yellow, Green, Cyan and Magenta, are arranged one over the other in the following manner:

Only three boxes are kept between the Cyan and Purple boxes. The Yellow box is kept at the bottom most position.

Only the Black colour box is kept between the Magenta and Green colour boxes.

What coloured box is kept at the third position from the top?

(a) Cyan
(b) Magenta
(c) Green
(d) Black

Q3. A women oriented community-based poverty reduction programme "Kudumbashree" was implemented in which state?

(a) Kerala
(b) Karnataka
(c) Tamilnadu
(d) Andhra Pradesh

Q4. 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 in the middle of one of the sides of the table. E is an immediate neighbour of G. E sits third to the left of F. Only three people sit between F and H. B sits to the immediate left of H. C sits third to the right of A. Who sits third to the right of D?

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

Q5. Which Article of the Indian Constitution is related with the High courts for Union Territories?

(a) 241
(b) 221
(c) 263
(d) 189

Q6. Ustad Mohi Bahauddin Dagar is a legendary musician associated with which of the following musical instruments?

(a) Sitar
(b) Rudra Veena
(c) Tabla
(d) Flute

Q7. Which of the following statements correctly defines oligopoly?

(a) If the market of a particular commodity consists of more than one seller, but the number of sellers is few, the market structure is termed as oligopoly.
(b) If the market of a particular commodity consists of just one seller but the number of customers is very high, the market structure is termed as oligopoly.
(c) If the market of a particular commodity consists of more than one seller but the number of sellers is very high, the market structure is termed as oligopoly.
(d) If the market of a particular commodity consists of just one seller and the number of customers is few, the market structure is termed as oligopoly.

Q8. Under which scheme was Somnath Promenade developed, as per the release of PMO on 20 August 2021?

(a) PRASHAD scheme
(b) AMRUT scheme
(c) UDAY scheme
(d) HRIDAY scheme

Q9. From 3/4 of a number P, Ramakrishna subtracts 2/3 of another number Q and obtain 5/8 as the difference. What is the answer Ramakrishna should obtain if he subtracts eight times of Q from nine times of P?

(a) 25/4
(b) 25/3
(c) 20/3
(d) 15/2

Q10. On simple interest, a certain sum becomes Rs. 3,400 at 12% p.a. in 3 years. Find the sum (in Rs.).

(a) 2,600
(b) 2,450
(c) 2,800
(d) 2,500

Q11. The amount payable on maturity of a certain sum invested at a certain rate of simple interest per annum for one year was Rs. 1,484. If the rate of interest had been 2% higher, the amount would have been Rs. 26.50 more. What was the interest that was paid on the sum invested at the original rate?

(a) Rs. 152.50
(b) Rs. 161
(c) Rs. 157
(d) Rs. 159

Q12. Cape Comorin, the southernmost tip of mainland India is located in which of the following states?

(a) Andhra Pradesh
(b) Karnataka
(c) Kerala
(d) Tamil Nadu

Q13. A can do 75% of the work in 30 days while B can do 50% of the same work in 18 days. If they work together, what fraction of the work will be done in 1 day?

(a) 1/19
(b) 1/20
(c) 7/120
(d) 19/360

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Q14. Madhavacharya (12^(th) century) wrote Madhava Nidana which contains _____ chapters exclusively on diagnosis of the diseases (nidana).

(a) 96
(b) 60
(c) 69
(d) 90

Q15. What is the median of 15, 2, 7, 8, 11, 5 and 14?

(a) 9.5
(b) 7.5
(c) 8
(d) 7

Q16. The Losar festival, quite popular in Arunachal Pradesh is mainly celebrated by the _____ tribe.

(a) Monpa
(b) Angami
(c) Hunas
(d) Apatani

Q17. The transformation of silkworms and frog larvae into adults through drastic changes is called _____.

(a) mutation
(b) metamorphosis
(c) diversification
(d) transfiguration

Q18. What is the formula for Net worth?

(a) Net Worth = Assets / Liabilities
(b) Net Worth = Assets - Liabilities
(c) Net Worth = Assets × Liabilities
(d) Net Worth = Assets + Liabilities

Q19. All 80 students in a class are standing in a straight row facing north. Ravali is 30^(th) from the extreme right end, while Kiriti is 26^(th) from the extreme left end. How many students are standing between Ravali and Kiriti?

(a) 33
(b) 42
(c) 28
(d) 24

Q20. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

All stools are round.

Some mountains are round.

Some ponds are mountains.

All ponds are square.

Conclusions:

I. Some ponds are round.

II. Some mountains are square.

III. Some ponds are both mountains and round.

IV. Some stools are square.

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

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(d) Both conclusions III and IV follow.

Q21. Rahul invested a certain sum for two years at 60% p.a. compound interest, compounded annually. If at the end of two years he received interest of Rs. 11,700, then how much did he initially invest?

(a) Rs. 7,750
(b) Rs. 8,000
(c) Rs. 7,500
(d) Rs. 7,250

Q22. The slant height of a right circular cone is 13 cm and the area of the base is 144π cm^2. Find the volume (in cm^3) of the cone.

(a) 245 π
(b) 225 π
(c) 240 π
(d) 260 π

Q23. _____ is the weakest of the acids listed below.

(a) Hydrofluoric acid
(b) Acetic acid
(c) Nitric acid
(d) Hydrochloric acid

Q24. A stick was broken in two parts which have lengths in the ratio 7 : 11. If the length of the smaller part was 77 cm, find the length of the unbroken stick.

(a) 1.80 m
(b) 1.98 m
(c) 1.26 m
(d) 1.21 m

Q25. A person walks 825 m in 3 minutes. What is his speed in km/h?

(a) 16.75
(b) 16.25
(c) 16.5
(d) 16.8

Q26. After the annexation of Awadh in 1856, Nawab Wajid Ali Shah was dethroned and exiled to _____.

(a) Meerut
(b) Rangoon
(c) Bombay
(d) Calcutta

Q27. The situation in an economy when inflation and unemployment both are at higher levels is known as _____.

(a) stagflation
(b) inflation premium
(c) inflationary gap
(d) reflation

Q28. India's first commercial nuclear power plant Tarapur is located in which of the following states?

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

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Q29. A solid metallic cone of diameter 36 cm and height 12 cm is melted and made into identical solid spheres each of radius 3 cm. How many such spheres can be made?

(a) 38
(b) 34
(c) 36
(d) 32

Q30. The change in demand for a good or service caused by a change in a consumer's purchasing power resulting from a change in real income is called _____.

(a) substitution effect
(b) marginal product
(c) budget set
(d) income effect

Q31. The Negroid race is indigenous to which of the following continents?

(a) South America
(b) Australia
(c) Asia
(d) Africa

Q32. Find the perimeter (in cm) of a square having an area equal to the area of a rhombus, measures of whose diagonals are 8 cm and 16 cm.

(a) 35
(b) 34
(c) 36
(d) 32

Q33. Which of the following states has the largest area (in absolute terms) under forest, according to the India State of Forest Report 2019?

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

Q34. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

Some goods are beautiful.

Some beautiful are costly.

Conclusions:

I. Some goods are costly.

II. All costly are beautiful.

(a) Only conclusion I follows.
(b) Neither conclusion I nor conclusion II follows.
(c) Only conclusion II follows.
(d) Either conclusion I or conclusion II follows.

Q35. Which dynasty did Harshavardhana belong to?

(a) Gupta dynasty
(b) Chalukya dynasty
(c) Maurya dynasty
(d) Pushyabhuti dynasty

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Q36. Karisma has been spending Rs. 5,400 on the purchase of an item every year for the past three years. However, the price per unit of this item has fluctuated from year to year with the per unit price being Rs. 9 in the first year, Rs. 24 in the second year and Rs. 14.40 in the third year. What was the average per unit price that Karisma paid for this item in the three years?

(a) Rs. 14.10
(b) Rs. 13.50
(c) Rs. 12.90
(d) Rs. 13.80

Q37. What is the difference between the LCM and the HCF of 24 and 18?

(a) 72
(b) 6
(c) 24
(d) 66

Q38. Amit's birthday on 16^(th) April 2020 was on Thursday. On which day was his wife's birthday on 2^(nd) June 2020?

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

Q39. The Palace of Assembly is a legislative assembly designed by noted architect Le Corbusier and is located in _____.

(a) Dadra and Nagar Haveli and Daman and Diu
(b) Ladakh
(c) Chandigarh
(d) Puducherry

Q40. The total surface area of a solid hemisphere is 1848 cm^2. What is the length of the diameter of the flat surface of the hemisphere. [Use $\pi = 22/7$]

(a) 14 cm
(b) 35 cm
(c) 28 cm
(d) 21 cm

Q41. Select the number from among the given options that can replace the question mark (?) in the following series.

8162, 7213, 6244, ?, 4246

(a) 5552
(b) 5255
(c) 2555
(d) 5525

Q42. In each of the number-pairs, the second number is obtained by performing a certain mathematical operation on the first number. Three of the following pairs follow the same pattern and thus form a group. Select the number-pair that does NOT belong to that group.

(a) 22 : 485
(b) 20 : 401
(c) 14 : 198
(d) 18 : 325

Q43. By selling an item for Rs. 1,729 Rohini made a loss of 30%. At what price should she sell the item to make a gain of 16%?

(a) Rs. 2,865.50
(b) Rs. 2,856.20
(c) Rs. 2,865.20
(d) Rs. 2,866.40

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Q44. If 27 × 3 × 896 ÷ √3136 = y + 640, then find the value of y.

(a) 666
(b) 648
(c) 664
(d) 656

Q45. In which city was the 4^(th) International Race Walking Championships held in February 2021?

(a) Lucknow
(b) Jaipur
(c) Ranchi
(d) Amritsar

Q46. A certain sum was invested at 40% p.a. compound interest for two years and the interest was compounded annually. If the interest was compounded half-yearly, the amount payable on maturity after two years would have been Rs. 4,544 more. What was the sum invested?

(a) Rs. 37,500
(b) Rs. 42,000
(c) Rs. 42,500
(d) Rs. 40,000

Q47. Of the given options, which is the saltiest sea in the world?

(a) Baltic Sea
(b) Red Sea
(c) Celebes Sea
(d) Black Sea

Q48. The average of two numbers is 46. Together with a third number, the combined average of three numbers changes to 43. What is the third number?

(a) 40
(b) 35
(c) 37
(d) 38

Q49. The length and the width of a rectangular plot of land are 10.5 m and 8 m, respectively. Find the cost of laying grass in the entire plot at Rs. 15.25 per square metre.

(a) Rs. 1,281
(b) Rs. 1,293
(c) Rs. 1,275
(d) Rs. 1,302

Q50. Sunidhi earned an average of Rs. 6,250 per month during the past 12 months. During the first 10 months her average earnings per month was Rs. 5,800. What was Sunidhi's average earnings per month during the last two months of the period?

(a) Rs. 8,500
(b) Rs. 8,250
(c) Rs. 8,750
(d) Rs. 7,750

Q51. Select the option that is related to the fifth letter-cluster in the same way as the fourth letter-cluster is related to the third letter-cluster and the second letter-cluster is related to the first letter-cluster.

AYTRES : SFTUZB:: MINTED : UFEOJN:: LTREAD:?

(a) FBETRS
(b) DFRHRE
(c) FBESUM
(d) DFRERT

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Q52. ABCD is a cyclic quadrilateral, AB is a diameter of the circle. If angle ACD = 35°, find the value of angle BAD.

(a) 70°
(b) 55°
(c) 45°
(d) 60°

Q53. Which country's satellite was carried into space by the Indian Polar Satellite Launch Vehicle PSLV-C51 in February 2021?

(a) USA
(b) Brazil
(c) Russia
(d) Japan

Q54. In a certain code language,

'You can add' is coded as 'cb ns pd',

'add their money' is coded as 'io uv cb',

'their bank can' is coded as 'km uv pd'.

(Note: All codes are two letter codes only)

What is the probable code for 'money bank' in the given code language?

(a) io pd
(b) km io
(c) pd cb
(d) cb km

Q55. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

Some mobiles are laptops.

No laptop is a computer.

All phones are computers.

Conclusions:

I. At least some mobiles are computers.

II. At least some phones are laptops.

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

Q56. Read the given statements and conclusions carefully. Decide which of the given conclusions is/are true based on the given statement.

Statement:

$W = H \leq G < C \geq T = L > M$

Conclusions:

I. $W < T$

II. $C > M$

(a) Neither conclusion I nor II is true
(b) Both conclusions I and II are true
(c) Only conclusion II is true
(d) Only conclusion I is true

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Q57. The Begumpuri mosque, built during the reign of _____, was the main mosque of Jahanpanah, his new capital in Delhi.

(a) Muhammad Tughluq
(b) Ghiyasuddin Tughluq
(c) Ghiyasuddin Balban
(d) Qutbuddin Aybak

Q58. In a class, there are four students - Ravindra, Shiva, Triveni and Nagesh, who want to be selected in the basketball team. All of them have different heights. Nagesh is shorter than Ravindra but taller than Triveni. Shiva is shorter than Nagesh but taller than Triveni. If the coach wants to select the tallest student among them, then who will be selected?

(a) Nagesh or Ravindra
(b) Triveni
(c) Shiva
(d) Ravindra

Q59. The LCM of two numbers is 35 times their HCF. The LCM and HCF differ by 238. If the two numbers differ by 14, then find the sum of the numbers.

(a) 84
(b) 82
(c) 86
(d) 83

Q60. Who among the following was awarded the 'Grand Prize of the Fukuoka Prize' in 2021?

(a) Palagummi Sainath
(b) Romila Thapar
(c) Ramchandra Guha
(d) Amjad Ali Khan

Q61. For Assembly elections (February - March 2022) in Uttar Pradesh, Uttarakhand and Punjab, the expenditure limit for legislative assembly candidates was revised to Rs. _____ lakh in January 2022.

(a) 40
(b) 50
(c) 30
(d) 20

Q62. John bought three items from a store. The price of item A was 2/3 of the price of item B, while the price of item C was 3/4 of the price of item B. If the price of item A was Rs. 88, then what was the price of item C?

(a) Rs. 121
(b) Rs. 99
(c) Rs. 90
(d) Rs. 108

Q63. Who won the gold medal in the women's individual recurve event at the Archery World Cup Stage 3 held in Paris in June 2021?

(a) Ankita Bhakat
(b) Bombayla Devi Laishram
(c) Dola Banerjee
(d) Deepika Kumari

Q64. A and B can do a piece of work together in 48 days, while B alone can do the work in 60 days. The duo start working together, but B leaves 15 days before the work gets over. For how many days did A and B work together?

(a) 33
(b) 48
(c) 42
(d) 45

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Q65. Which of the following statements with regard to the Green Revolution is NOT true?

(a) It requires decreasing inputs over time.
(b) It increases crop yields.
(c) It uses high-yielding varieties of seeds.
(d) It needs fertilizers and pesticides.

Q66. Anil starts walking from Point K. He walks 30 m towards the east, turns right and walks for 20 m to reach point M. He then takes a left turn, walks for 35 m, takes a right turn and walks for 28 m to reach Point R. He finally takes a right turn and walks for 50 m to reach Point X.

In which direction is Point X with respect to Point K?

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

Q67. Under which flagship programme did the Ministry of Skill Development and Entrepreneurship launch a pilot project to revive Kashmir's Namda craft in November 2021?

(a) Pradhan Mantri Kaushal Vikas Yojana 3.0
(b) Capacity building Scheme
(c) Pradhan Mantri Vaya Vandana Yojana
(d) Rozgar Mela Scheme

Q68. Vimal secured 46% marks in the exam and failed to qualify in the exam by 10 marks. If he secured 52% marks, he would have secured 8 marks more than what was the minimum qualifying marks. What were the minimum marks one had to score to qualify in the exam?

(a) 156
(b) 146
(c) 148
(d) 138

Q69. Select the correct conclusion that could be drawn from the given expression.

$R > T \geq N > U = S \leq Z < V$

(a) $R > U$
(b) $N < Z$
(c) $V < T$
(d) $T = S$

Q70. Which of the following is NOT a valid IPv4 address?

(a) 10.10.10.10
(b) 100.100.10.1
(c) 100.100.10.10
(d) 1000.100.10.1

Q71. Which Indian state was the first to be carved out on the basis of language in the year 1956?

(a) Andhra Pradesh
(b) Punjab
(c) West Bengal
(d) Gujarat

Q72. When 5 is added to one-third of a number, the sum is 59. What is the number?

(a) 172
(b) 167
(c) 162
(d) 192

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Q73. A train ran for 12 km in the north direction from Point A to reach Point B. From there, it took a right turn and ran for 20 km to reach Point C. Then, it ran for 6 km after taking a left turn and reached Point D. From there, it took a left turn again and ran for a distance of 8 km to reach Point E. Then, it covered 18 km in the south direction to reach Point F.

How far and in which direction is Point A with respect to Point F?

(a) 15 km south
(b) 10 km, east
(c) 12 km, west
(d) 13 km, west

Q74. Select the letter-cluster from among the given options that can replace the question mark (?) in the following series.

GSI, ITD, KUY, MVT, OWO, ?

(a) JYM
(b) QYK
(c) QXJ
(d) JXM

Q75. When 3/4 of a number is subtracted from 6/7 of 126, the answer is 33. What is the number?

(a) 92
(b) 100
(c) 112
(d) 96

Q76. Which of the following states are 'Husori' or 'Huchari' performance associated?

(a) Maharashtra
(b) Kerala
(c) Odisha
(d) Assam

Q77. Which Indian American-led start-up was awarded the 'National Science Foundation Innovation-Corps (NSF I-Corps) Teams Award' on 11 August 2021?

(a) SoftWorthy
(b) Zenefits
(c) Bloom Energy
(d) Instacart

Q78. If 'Autumn' is called 'Winter', 'Winter' is called 'Summer', 'Summer' is called 'Rainy', 'Rainy' is called 'Cloudy', then in which season do we definitely wear woollen germents?

(a) Cloudy
(b) Rainy
(c) Summer
(d) Winter

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

Varun, Kashyap, Anil, Johnson, Samson and Prasad are sitting in a row facing north but not necessarily in the same order. Varun and Kashyap sit at the extreme ends. Anil is sitting to the immediate left of Varun. Only one person sits between Anil and Samson. Johnson is not an immediate neighbour of Kashyap.

Who is sitting to the immediate right of Kashyap?

(a) Varun
(b) Prasad
(c) Samson
(d) Johnson

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Q80. The National Consumer Disputes Redressal Commission (NCDRC) was established in the year _____, under the Consumer Protection Act of 1986.

(a) 1988
(b) 1995
(c) 1987
(d) 1991

Q81. There are seven members, H, I, J, K, L, M and N, in a family. H is K's mother's mother. J and L are the only two children of H and M. J is the only daughter of M. N is the son of L and I. How is M related to N?

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

Q82. Select the combination of letters that when sequentially placed in the blanks of the given series will complete the series.

a_ bca _ _ ca _ b _ _ abc

(a) aaacba
(b) bacaaa
(c) abacaa
(d) aabaca

Q83. Articles 5 to 11 of the Constitution of India deals with the:

(a) Fundamental Duties
(b) Citizenship
(c) Fundamental Rights
(d) Indian Union

Q84. Find the value of (162 ÷ 9) ÷ 3 - (343 ÷ 49) ÷ 7.

(a) (- 1)/7
(b) 5
(c) 53
(d) -1

Q85. Select the option that is related to the fifth letter-cluster in the same way as the fourth letter-cluster to the third letter-cluster and the second letter-cluster is related to the first letter-cluster.

HTWCGY : WTHCGY :: ABHGLP : HBAGLP :: LGETDR : ?

(a) EGTLDR
(b) EGLRTD
(c) RDTEGL
(d) EGLTDR

Q86. Ramen leaves his home every day at 7:40 am and reaches his office at 9:46 am. One day, he left his home at 7:40 am but travelled one-fourth of the distance at 6/7 of the usual speed and the rest of the distance at 6/5 of the usual speed. At what time did Ramen reach office on that day?

(a) 9:45:40 am
(b) 9:35:30 am
(c) 9:25:50 am
(d) 9:30:55 am

Q87. If in a certain code language, DANCER is called TEACHER, TEACHER is called PILOT, PILOT is called LAWYER, LAWYER is called SINGER, and SINGER is called CHEF, then who practices law?

(a) CHEF
(b) SINGER
(c) LAWYER

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(d) PILOT

Q88. Which of the following numbers is NOT divisible by 9?

(a) 45390
(b) 49104
(c) 35253
(d) 77832

Q89. There are six girls Mayuri, Kavyanjali, Divya, Poonam, Neha and Vidya. Each girl likes a different colour - red, blue, purple, yellow, green and pink. Divya likes red colour. Poonam does not like green and yellow colour. Neha likes purple colour. Vidya does not like pink and green colour. Mayuri likes blue colour. Which of the following girl and colour combinations is correct?

(a) Kavyanjali - Pink
(b) Neha - blue
(c) Vidya - yellow
(d) Poonam - green

Q90. Which of the following is a popular harvest dance in the Bundelkhand region of Madhya Pradesh?

(a) Maruni
(b) Charba
(c) Jawara
(d) Dhalo

Q91. There are six friends, Aman, Bikram, Chetan, Dhanush, Elisa and Frank, each having a different height. Only three friends are shorter than Chetan. Aman is shorter than only Dhanush. Frank is shorter than Elisa. Frank is not the shortest. How many friends are shorter than Frank?

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

Q92. The erstwhile state of Bombay was bifurcated to create the present-day states of Maharashtra and _____.

(a) Chhattisgarh
(b) Karnataka
(c) Gujarat
(d) Goa

Q93. A conical tent with base diameter 10 m and height 12 m has been made. An additional 10% cloth is required as wastage in stitching the tent. Find the area of the cloth required (in m^2). [Use $\pi = 3.14$]

(a) 78.5 π
(b) 65 π
(c) 60 π
(d) 71.5 π

Q94. 29.5% of a number is 0.59. What is that number?

(a) 2.4
(b) 2
(c) 2.5
(d) 1.8

Q95. Six friends Sheela, Roma, Sheetal, Sreeja, Naina and Rahul are sitting on a bench facing north. Sreeja and Rahul are sitting at the 3^(rd) and 4^(th) positions respectively from the left end. Sheela and Naina are sitting at the extreme right and left ends, respectively. Sheela is sitting to the immediate right of Roma. Who is sitting immediately next to Naina?

(a) Roma
(b) Sheetal

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(c) Sheela
(d) Sreeja

Q96. Which Five-year Plan was suspended one year before the time schedule by the Janata Party?
(a) First
(b) Fourth
(c) Fifth
(d) Seventh

Q97. Which of the following options is the closest approximate value which will come in place of question mark (?) in the following equation?
9.99^(3.001) - 5.001^(2.999) + 4.997 = ?
(a) 880
(b) 700
(c) 985
(d) 565

Q98. Santos Port also known as 'coffee port' of the world is located in _____.
(a) France
(b) Canada
(c) the United Kingdom
(d) Brazil

Q99. Which of the following types of read-only memory can be erased by exposing it to an electrical charge and can be reprogrammed?
(a) EEPROM
(b) PROM
(c) EPROM
(d) ROM

Q100. Eight friends, Janaki, Komali, Lokesh, Manu, Nirvan, Rajan, Paru and Silpa, are sitting around a square table in such a way that four of them sit at four corners while four sit in the middle of each of the four sides. The ones who sit in the middle of the sides face the centre, while those who sit at the four corners face outward (i.e. opposite the centre). Lokesh sits third to the right of Manu. Manu sits in the middle of one of the sides of the table. Exactly three people sit between Lokesh and Silpa. Paru sits second to the right of Silpa. Nirvan is one of the immediate neighbours of Paru. Exactly three people sit between Nirvan and Komali. Janaki sits second to the right of Komali. Which of the following statements is true regarding Rajan?
(a) Nirvan sits second to the left of Rajan.
(b) Both Manu and Komali are immediate neighbours of Rajan.
(c) Only three people sit between Rajan and Janaki.
(d) Rajan sits in the middle of one of the sides

Q101. The churches and convents of Goa were added to the list of UNESCO World Heritage Sites in the year _____.
(a) 1986
(b) 1989
(c) 1984
(d) 1983

Q102. Which Indian personality has been appointed Regional Director for South Asia in the International Court of Arbitration of International Chamber of Commerce (ICC) in September 2021?
(a) Anita Bhatia
(b) Chitra Ramkrishna
(c) Tejus Chauhan
(d) Krish Iyer

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Q103. Which of the following is termed a hunger hormone as it stimulates appetite, increases food intake and promotes fat storage?

(a) Insulin
(b) Resistin
(c) Leptin
(d) Ghrelin

Q104. If $\sin 2x = \cos 60° \cos 30° + \sin 60° \sin 30°$, then which of the following is a possible value of $\tan x + \sec x$? $(0 < x < 90°)$

(a) $(\sqrt{3})/2$
(b) $(3\sqrt{3})/2$
(c) $(\sqrt{3})/4$
(d) $\sqrt{3}$

Q105. The Amazon Rainforest which is well known as the lungs of the earth is located in _____.

(a) North America
(b) Africa
(c) Asia
(d) South America

Q106. In a certain code language, 'COUSIN' is written as 'UOISNC' and 'AUNTY' is written as 'UAYTN'. How will 'UNCLE' be written in that language?

(a) UNELC
(b) CNEUL
(c) UENLC
(d) CNELU

Q107. If $\cot^2\theta = 1 + \cos^2\theta - \sin^2\theta$, $0° < \theta < 90°$, then find the value of $\tan^2\theta + \text{cosec}^2\theta$.

(a) 1/2
(b) 3/2
(c) -1
(d) 3

Q108. The Union Ministry of Social Justice and Empowerment in the year 2015 notified that every year _____ will be celebrated as the 'Constitution Day' to promote Constitutional values among citizens.

(a) 26 January
(b) 26 December
(c) 26 November
(d) 26 June

Q109. Who was the first Indian to join the Indian Civil Services?

(a) Surendranath Banerjee
(b) Romesh Dutt
(c) Behari Lal Gupta
(d) Satyendranath Tagore

Q110. Asthenosphere is a part of _____.

(a) Earth's Core
(b) Earth's Mantle
(c) Earth's Crust + Mantle
(d) Earth's Crust

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Q111. Consider the given statement and decide which of the given assumptions is/are implicit in the statement.

Statement:

One must wake up early in the morning and exercise.

Assumptions:

I. Exercising is not possible at any other time of the day.

II. Everyone who exercises early in the morning is fitter than those who do not.

(a) Both assumptions I and II are implicit
(b) Only assumption I is implicit
(c) Only assumption II is implicit
(d) Neither assumption I nor assumption II is implicit

Q112. Study the given arrangement of letters, symbols and numbers and answer the question that follows.

(Left) A 8 & $ 4 Y & 6 # @ 9 U Y 3 % L 6 & K 9 & P V 4 B & % # U Y 8 $ # (Right)

Which of the following will be fourth to the right of the sixth from the left end of the arrangement?

(a) P
(b) 9
(c) #
(d) @

Q113. Vishakha joined five different hobby classes viz. Painting, Dancing, Modelling, Singing and Cooking. She attends each class on different days of the same week from Monday to Friday but not necessarily in the same order. She attends Modelling class on Wednesday. She attends neither Painting nor Dancing class on Thursday and Friday. She attends Cooking class on Friday.

On which day does she attend Singing class?

(a) Tuesday
(b) Monday
(c) Thursday
(d) Data is inadequate.

Q114. In a certain code language,

'living inside houses' is coded as 'ca de mo'.

'snow houses built' is coded as 'ni tp ca',

'living with snow man' is coded as 'vr hs ni mo''.

(Note: All codes are two letter codes only)

If 'built with brick' is coded as 'vr aj tp', what is the probable code for 'brick man' in the given code language?

(a) mo to
(b) hs aj
(c) vr ni
(d) aj vr

Q115. Which of the following is a major wheat growing region of India?

(a) Eastern Ghats
(b) Sundarbans Delta
(c) Punjab-Haryana Plains
(d) Western Coast

Q116. In July 2021, Rakesh Asthana was appointed to which of the following posts?

(a) Vice Chief of the Indian Navy
(b) CBI Director
(c) Director General of National Investigation Agency
(d) Commissioner of Delhi police

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Q117. A two-digit positive number is such that the product of its digits is 24. When 18 is added to the number, the digits interchange their places. Which smallest positive number should be subtracted from the given number to make it a perfect square?

(a) 0
(b) 12
(c) 8
(d) 10

Q118. Which of the following pilot projects was launched on the occasion of World Environment Day 2021, with an aim of establish a network for production and distribution of ethanol in India?

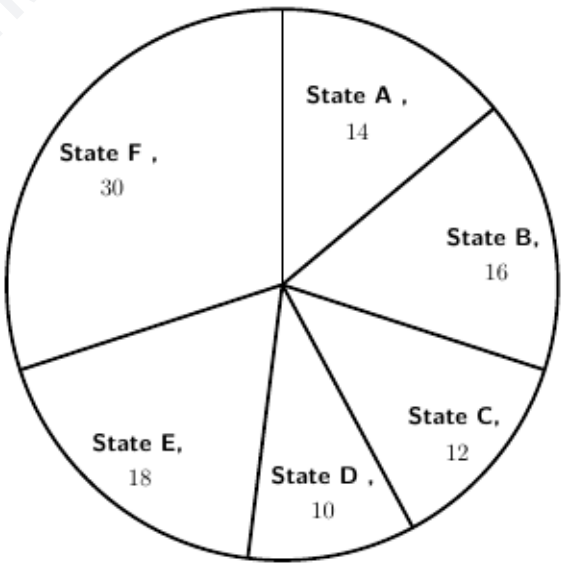
(a) E-65
(b) E-50
(c) E-100
(d) E-103

Q119. The Mahatma Gandhi National Rural Employment Guarantee Act provide guaranteed wage employment for a minimum of _____ days in year.

(a) 100
(b) 60
(c) 70
(d) 180

Q120. The following pie chart shows the percentage of crime cases reported in a particular year across various states.

Crime percentage across various states



If the crime cases in state A (14% in the pie chart) were 672 in that year, what was the number of cases reported in state C and state F together?

(a) 1060
(b) 800
(c) 2016
(d) 1214

ANSWER KEY

1	d	2	d	3	a	4	b	5	a	6	b	7	a	8	a	9	d	10	d
11	d	12	d	13	d	14	c	15	c	16	a	17	b	18	b	19	d	20	b
21	c	22	c	23	b	24	b	25	c	26	d	27	a	28	d	29	c	30	d
31	d	32	d	33	d	34	b	35	d	36	b	37	d	38	b	39	c	40	c

41	b	42	c	43	c	44	d	45	c	46	d	47	b	48	c	49	a	50	a
51	c	52	b	53	b	54	b	55	d	56	c	57	a	58	d	59	a	60	a
61	a	62	b	63	d	64	d	65	a	66	d	67	a	68	c	69	a	70	d
71	a	72	c	73	c	74	c	75	b	76	d	77	a	78	c	79	b	80	a
81	c	82	d	83	b	84	b	85	d	86	b	87	b	88	a	89	c	90	c
91	c	92	c	93	d	94	b	95	b	96	c	97	a	98	d	99	a	100	b
101	a	102	c	103	d	104	d	105	d	106	c	107	d	108	c	109	d	110	b
111	d	112	d	113	c	114	b	115	c	116	d	117	d	118	c	119	a	120	c

SOLUTIONS

Q1. Answer: (d) 18^(th)

1. In a row of 28 students, Jamuna was 12th from the extreme left end.

• This implies that Jamuna was 17th from the extreme right end.

2. Ganga was 19th from the extreme right end.

3. If Sarasvati was seated exactly between them.

Clearly, Sarasvati is 18th from the right end.

Hence, '18th' is the correct answer.

Q2. Answer: (d) Black

Six identical boxes of different colours, Purple, Black, Yellow, Green, Cyan and Magenta, are arranged one over the other in the following manner:

1. The Yellow box is kept at the bottom-most position.

Case I	Case II
Yellow	Yellow

2. Only three boxes are kept between the Cyan and Purple boxes.

Case I	Case II
Cyan	Purple
Purple	Cyan
Yellow	Yellow

3. Only the Black colour box is kept between the Magenta and Green colour boxes.

Case I	Case II
Cyan	Purple
Magenta/Green	Magenta/Green
Black	Black

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Magenta/Green	Magenta/Green
Purple	Cyan
Yellow	Yellow

Clearly, Black coloured box is kept at the third position from the top.

Hence, 'Black' is the correct answer.

Q3. Answer: (a) Kerala

The correct answer is Kerala.

Key Points

• On May 17, 1998, former Prime Minister Atal Bihari Vajpayee officially launched Kudumbashree, the Kerala State Poverty Eradication Mission.

• Under the direction of Local Self Governments established and given authority by the 73rd and 74th Amendments to the Indian Constitution, the Mission aspires to remove absolute poverty within a set time frame of ten years.

• By putting the impoverished in community-based groups, the Mission established by the State Government with the active assistance of the Government of India and NABARD has adopted a novel approach to combating poverty.

• Instead of using a project-based strategy, the Mission uses a process approach.

• Bringing together women from all walks of life to fight for their rights or for empowerment, Kudumbashree, a community organisation of Neighborhood Groups (NHGs) of women in Kerala, has been recognised as a successful method for the empowerment of women in rural as well as urban regions.

Important Points

• Kerala: (As of 2022)

• Governor: Arif Mohammad Khan

• Capital: Thiruvananthapuram

• Chief Minister: Pinarayi Vijayan

Q4. Answer: (b) H

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.

1. G sits in the middle of one of the sides of the table.

2. E is an immediate neighbour of G.

3. E sits third to the left of F.

4. Only three people sit between F and H.

The above condition cannot be satisfied in Case I, so it is eliminated.

5. B sits to the immediate left of H.

6. C sits third to the right of A.

Only one position is vacant and only D is left, so the vacant position will be occupied by D.

Clearly, H sits third to the right of D.

Hence, 'H' is the correct answer.

Q5. Answer: (a) 241

The correct answer is 241.

Key Points

• Article 241

• Deals with high courts for union territories.

Andaman and Nicobar Islands	**• It comes under Calcutta high court**
Chandigarh	• It comes under Punjab and Haryana
Dadra and Nagar Haveli	• It comes under the Bombay high court
Daman and Diu	• It comes under the Bombay high court
Delhi	• Separate high court
Lakshadweep	• It comes under Kerala high court

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Pondicherry	• It comes under Madras high court

Additional Information

• Article 221 of the Indian Constitution makes laws for the salaries to be provided to the judges of each High court.

• Article 189

• Voting in Houses, power of Houses to act notwithstanding vacancies and quorum.

• Article 263 - Provisions with respect to an inter-State Council If any time it appears to the President that the public interests would be served by the establishment of a Council charged with the duty of

• Inquiring into and advising upon disputes which may have arisen between States;

• Investigating and discussing subjects in which some or all of the States, or the Union and one or more of the States, have a common interest; or

• Making recommendations upon any such subject and, in particular, recommendations for the better coordination of policy and action with respect to that subject, it shall be lawful for the President by order to establish such a Council, and to define the nature of the duties to be performed by it and its organisation and procedure.

Q6. Answer: (b) Rudra Veena

The correct answer is Rudra Veena.

Key Points

• Ustad Mohi Bahauddin Dagar is the son of renowned North Indian musician Zia Mohiuddin Dagar, he plays the Rudra veena.

• He performs Dagarbani-style Rudra veena.

• Referring to Nayak Haridas Dagar of the 16th century, he represents the 20th generation of the Dagar dynasty.

• He received the highest honour for performing artists in 2012 when the Sangeet Natak Akademi, India's National Academy for Music, Dance, and Drama, presented him with the Sangeet Natak Akademi Award.

Important Points

• Large plucked string instruments, such as the Rudra veena, are employed in Hindustani classical music, particularly dhrupad.

• It is one of the main veena varieties used in Indian classical music and is distinguished by its powerful bottom resonance.

• The Rudra veena achieved great importance among Mughal court musicians, and it is documented in court records as early as Zain-ul Abidin's (1418–1470) reign.

Q7. Answer: (a) If the market of a particular commodity consists of more than one seller, but the number of sellers is few,...

The correct answer is If the market of a particular commodity consists of more than one seller, but the number of sellers is few, the market structure has termed an oligopoly.

Key Points

• A market with an oligopoly has a small number of businesses that are aware of their interdependence in terms of price and production strategies.

• Each company has a certain amount of market power due to the small number of enterprises.

• Oligopoly differs from perfect competition in that each firm must consider its interconnectedness, from monopolistic competition in that firms have some control over pricing, and from monopoly, in that, a monopolist has no competitors.

• The implications of mutual dependency among firms in pricing and output decisions are generally the focus of oligopoly study.

Additional Information

• A market with a monopoly has just one producer, a duopoly has two businesses, and an oligopoly has three or more businesses.

• A monopoly is a market system where there is only one seller and there are enough barriers to entry for any other sellers.

Q8. Answer: (a) PRASHAD scheme

The correct answer is PRASHAD scheme.

In News

• According to a release by the PMO, the Somnath Promenade has been developed under the PRASHAD (Pilgrimage Rejuvenation and Spiritual, Heritage Augmentation Drive) Scheme at a cost of over Rs 47 crore.

Additional Information

• PRASAD scheme was launched in the year 2014-2015 under the Ministry of Tourism.

• This scheme focuses on developing and identifying pilgrimage sites across India for enriching the religious tourism experience.

• It aims to integrate pilgrimage destinations in a prioritised, planned and sustainable manner to provide a complete religious tourism experience.

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Q9. Answer: (d) 15/2

Given:

From 3/4 of a number P, Ramakrishna subtracts 2/3 of another number Q and obtain 5/8 as the difference.

Calculation:

3/4 of a number P = 3P/4

2/3 of number Q = 2Q/3

According to the question,

3P/4 - 2Q/3 = 5/8

=> (9P - 8Q)/12 = 5/8

=> (9P - 8Q)/3 = 5/2

=> 9P - 8Q = 5 × 3 over 2

=> 9P - 8Q = 15 over 2

Therefore The answer Ramakrishna should obtain is 15 over 2 if he subtracts eight times of Q from nine times of P.

Q10. Answer: (d) 2,500

Given:

Amount (A) = Rs. 3,400

Rate of interest (R) = 12% p.a.

Time (T) = 3 years.

Concept used:

Simple Interest, SI = (P × R × T)/100

Amount = P + SI

where

P = Principal amount

R = Rate of interest per year

T = Time in years

Calculation:

Let the principal amount be Rs. P.

According to the concept,

P + (P × 12 × 3)/100 = 3400

=> (100P + 36P)/100 = 3400

=> 136P = 340000

=> P = 340000/136

=> P = 2500

Therefore The sum is Rs. 2500.

Shortcut TrickLet Principal be 100%

The total interest after 3 years = 12% × 3 = 36%

=> P + Interest = Amount

=> 136% = Rs. 3,400

=> 100% = (3400/136) × 100 = Rs. 2,500

Q11. Answer: (d) Rs. 159

Shortcut Trick

Principal = 100%

As per question,

2% = 26.50

Principal = 100% = (26.50/2) × 100 = 1325

Interest = Amount - Principal = 1484 - 1325 = 159

Therefore The interest that was paid on the sum invested at the original rate is Rs. 159.

Given:

The amount payable on maturity of a certain sum invested at a certain rate of simple interest per annum for one year was Rs. 1,484.

If the rate of interest had been 2% higher, the amount would have been Rs. 26.50 more.
Concept used:
Simple Interest, SI = (P × R × T)/100
Amount = P + SI
where
P = Principal amount
R = Rate of interest per year
T = Time in years
Calculation:
Let the principal sum and rate of interest be Rs. P and R% respectively.
According to the question,
P + (P × R × 1)/100 = 1484
=> P(100 + R) = 1484 × 100
=> P(100 + R) = 148400 ....(1)
P + {P × (R + 2) × 1}/100 = 1484 + 26.50
=> P(100 + R + 2) = 1510.5 × 100
=> P(102 + R) = 151050 ....(2)
Now (2) ÷ (1),
P(102 + R)/P(100 + R) = 151050/148400
=> (102 + R)/(100 + R) = 57/56
=> (102 + R) + (100 + R) over (102 + R) - (100 + R) = 57 + 56 over 57 - 56
=> 202 + 2R over 2 = 113/1
=> 202 + 2R = 113 × 2
=> 202 + 2R = 226
=> 2R = 226 - 202
=> R = 24/2
=> R = 12
Putting R = 12 in (1),
P(100 + 12) = 148400
=> P = 148400/112
=> P = 1325
Now, the interest that was paid on the sum invested at the original rate
=> 1484 - 1325
=> 159
Therefore The interest that was paid on the sum invested at the original rate is Rs. 159.

Q12. Answer: (d) Tamil Nadu

The correct answer is Tamil Nadu.
Key Points
• Kanyakumari is located at the southern tip of the Cardamom Hills in Tamil Nadu.
• Cape means the land infiltrated into the sea and Comorin is the former ame of the Kanyakumari.
• During the British Rule, sailors and traders used the word Cape to mention the identical landmark of Comorin.
Important Points
• The north-south extent from Indira Col in Kashmir to Kanyakumari is 3,214 km.
• The east-west width from the Rann of Kutch to Arunachal Pradesh is 2,933 km.
• With an area of 32,87,263 sq km, India is the seventh-largest country in the world.
• India accounts for about 2.4 per cent of the total surface area of the world.
Additional Information
• Extreme points of India:

Easternmost	**Kibithu in Arunachal Pradesh.**
Westernmost	Ghuar Mota in the Kutch region of Gujarat.

Northernmost	Indira Col
Southernmost (Mainland)	Kanyakumari is also known as Cape Comorin.

Q13. Answer: (d) 19/360

Shortcut Trick

Find total days for A and B: A = 30 × (100/75) = 40 days, B = 18 × (100/50) = 36 days.

Combined 1-day work fraction = (A + B) ÷ (A × B)

Combined 1-day work = (40 + 36) ÷ (40 × 36) = 76 ÷ 1440 = 19/360.

Therefore The correct answer is 19/360.

Alternate Method

Given:

A does 75% (3/4) work in 30 days.

B does 50% (1/2) work in 18 days.

Calculations:

=> Time taken by A to complete 100% work = 30 × (4/3) = 40 days

=> Time taken by B to complete 100% work = 18 × 2 = 36 days

=> Let Total Work be the LCM of 40 and 36.

Person	Total Days	Total Work (LCM)	Efficiency (Units/Day)
A	40	360 units	360 ÷ 40 = 9
B	36	360 ÷ 36 = 10	

=> Combined Efficiency of (A + B) = 9 + 10 = 19 units/day

=> Fraction of work done in 1 day = Combined Efficiency ÷ Total Work

=> Fraction = 19 ÷ 360 = 19/360

Therefore The correct answer is 19/360.

Additional Information

Efficiency and Time Relationship

The Efficiency of a person is inversely proportional to the Time taken to complete the work (Efficiency = 1 ÷ Time).

Combined Work Formula

If A can do a piece of work in 'x' days and B can do it in 'y' days, then together they can finish it in (x × y) ÷ (x + y) days.

Work Fraction

If a person completes a work in n days, the part of work done in 1 day is 1/n.

Q14. Answer: (c) 69

The correct answer is 69.

Key Points

• Madhava Nidana, written by Madhavacharya in the 12th century, has 69 chapters that are dedicated solely to sickness diagnosis (Nidana).

• It is the first work of its kind in Ayurveda to concentrate solely on one subject, diagnosis.

• It is interesting to observe that not a single sutra makes any reference to how to treat an illness.

• For the first time, comprehensive descriptions of Amavata (Rheumatism) and Amlapitta (Acid-peptic diseases) are provided.

• The details of Vatavyadhi (Neurological disorders) are pretty detailed.

Important Points

• Madhvacharya, also known as Purna Prajna and Nanda Tirtha, was a prominent advocate of the Dvaita (dualism) school of Vedanta and an Indian philosopher and theologian.

• Madhva's philosophy was known as Tattvavda, which translates as "Arguments from a realist viewpoint."

Q15. Answer: (c) 8

Given:

15, 2, 7, 8, 11, 5 and 14

Concept used:

Median is defined as the middle value of a sorted list of numbers.

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Calculation:

The distribution in sorted form,

2, 5, 7, 8, 11, 14, 15.

Now, the median of the distribution = 8

Therefore 8 is the median of 15, 2, 7, 8, 11, 5, and 14.

Q16. Answer: (a) Monpa

The correct answer is Monpa.

Key Points

• In Arunachal Pradesh, the Losar Festivals are observed. People of the Monpa Tribe, who are thought to reside in Arunachal Pradesh, celebrate it.

• Tawang celebrates the three-day Losar festival with a lot of fanfare.

• The celebration is observed to ward off bad spirits and greet the new year, which is meant to be prosperous and happy.

• The state of Nagaland in North-East India is home to a sizable Naga ethnic minority known as the Angamis.

Important Points

• The Angami Nagas are a recognised ethnic group in the state of Manipur and are primarily concentrated in the Nagaland districts of Kohima, Chümoukedima, and Dimapur.

• A group of Central Asian tribes that crossed the Khyber Pass into the Indian subcontinent towards the close of the fifth or beginning of the sixth century were known as the Hunas by the ancient Indians.

• In the Lower Subansiri district of Arunachal Pradesh, India, in the Ziro valley, there is a tribe known as the Apatani.

Q17. Answer: (b) metamorphosis

The correct answer is metamorphosis.

Key Points

• Metamorphosis process: The transformation of the larva into an adult through drastic changes is called metamorphosis. It is a biological process that involves sudden and abrupt changes in the body structure of the animal by cell growth and differentiation. It is generally observed in amphibians and insects. Examples: frogs and butterflies.

Important Points

• Metamorphosis of a butterfly

• There are four stages in the process of the Metamorphosis of a butterfly.

• The first stage is the egg.

• The Butterfly eggs are laid on the plants by the female Butterfly.

• The second stage is the larva stage in which the butterfly exists in the form of a caterpillar.

• The Third stage is Pupa which is the transitional phase in which the Caterpillar changes into Butterfly.

• The fourth stage is the Adult stage in which a full-grown adult butterfly comes out of the pupa.

Additional Information

• Complete metamorphosis is seen in butterflies.

• Complete metamorphosis consists of a very active, ravenously eating larval stage and an inactive pupa stage while the incomplete metamorphosis has a nymph, which very closely resembles the adult

• Examples of insects showing Complete metamorphosis - wasps, ants, butterflies, and fleas

• Examples of insects showing Incomplete metamorphosis - are termites, praying mantis, and cockroaches

Q18. Answer: (b) Net Worth = Assets - Liabilities

The correct answer is Net Worth = Assets - Liabilities.

Key Points

• The book value of the equity held by shareholders of a corporation is referred to as "Net worth."

• It can also be thought of as the net worth of a corporation that its shareholders would be able to claim in the event that all of its assets were liquidated and all of its obligations were paid off.

• To put it another way, it is the sum of assets that remain after all liabilities have been settled.

• Stockholder's equity and shareholder's equity are other names for a company's net worth.

• By deducting the subject company's total liabilities from its total assets, one can arrive at the formula for net worth.

Important Points

• Although equity and net worth are sometimes used interchangeably, they are occasionally employed in different circumstances.

• The net worth calculation takes into account both assets and liabilities.

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• The following are the two things to keep in mind when thinking about net worth:
• If net worth is more than zero, it can pay off debt and has strong financial growth.
• If net worth is zero, the company cannot pay its debts and has negative financial growth.

Q19. Answer: (d) 24

1. All 80 students in a class are standing in a straight row facing north.
2. Ravali is 30th from the extreme right end.
3. Kiriti is 26th from the extreme left end.

Number of students standing between Ravali and Kiriti = 80 - (30 + 26)
= 80 - 56
= 24
Hence, '24' is the correct answer.

Q20. Answer: (b) Only conclusion II follows.

The least possible Venn diagram is:
Conclusions:
I. Some ponds are round. → False (it is possible but not definite)
II. Some mountains are square. → True (Some ponds are mountains and All ponds are square → Some mountains are square)
III. Some ponds are both mountains and round. → False (it is possible but not definite)
IV. Some stools are square. → False (it is possible but not definite)
Hence, only conclusion II follows.

Q21. Answer: (c) Rs. 7,500

Given:
Rate of interest = 60%
Time (n) = 2 years
Interest = Rs. 11,700
Concept used:
Compound interest, CI = $P(1 + R/100)^n - P$
where
P = Principal amount
R = Rate of interest per year
N = Time in years
Calculation:
Let the initial investment (Principal amount) be P.
According to the question,
$P(1 + 60/100)^2 - P = 11700$
=> $P \times 1.6^2 - P = 11700$
=> $P \times 2.56 - P = 11700$
=> $P (2.56 - 1) = 11700$
=> $P \times 1.56 = 11700$
=> $P = 11700/1.56$
=> $P = 7500$
Therefore He initially invested Rs. 7,500.

Q22. Answer: (c) 240 π

Shortcut Trick
Identify the Radius: Base area $\pi r^2 = 144\pi$ => r = 12 cm.
Use the Pythagorean Triplet (5, 12, 13) where radius r = 12 and slant height l = 13.
Therefore Height (h) of the cone = 5 cm.
Volume = (1/3) × Base Area × h = (1/3) × 144π × 5 = 48π × 5 = 240π cm^3.
Therefore The correct answer is 240π cm^3.
Alternate Method

Given:

Slant height (l) = 13 cm

Base Area (πr^2) = 144π cm^2

Formula Used:

1. Volume of cone = (1/3) × $\pi r^2 h$

2. Slant height relation: $l^2 = r^2 + h^2$

Calculations:

=> Base Area = $\pi r^2 = 144\pi$

=> $r^2 = 144$ => r = 12 cm

=> Using $l^2 = r^2 + h^2$

=> $13^2 = 12^2 + h^2$

=> $169 = 144 + h^2$

=> $h^2 = 169 - 144 = 25$

=> $h = \sqrt{25} = 5$ cm

=> Volume = (1/3) × 144π × 5

=> Volume = $48\pi \times 5 = 240\pi$ cm^3

Therefore The correct answer is 240π cm^3.

Additional Information

Curved Surface Area (CSA) of a Cone

The lateral or curved surface area is given by the formula CSA = π × r × l, where l is the slant height.

Total Surface Area (TSA) of a Cone

The total surface area includes the base area and the CSA: TSA = πr(r + l).

Relation between Cone and Cylinder Volume

The volume of a cone is exactly one-third of the volume of a cylinder with the same radius and height: V_(cone) = (1/3) × V_(cylinder).

Pythagorean Relation

In any right circular cone, the height (h), radius (r), and slant height (l) always satisfy $l^2 = h^2 + r^2$.

Q23. Answer: (b) Acetic acid

The correct answer is Acetic acid.

Key Points

• Because it partially dissociates into its constituent ions when acetic acid is dissolved in water, Acetic acid is a weak acid.

• It is well known that this weak acid can mix miscible with water. In an aqueous solution, an acid called acetic acid ionises just marginally.

• A particularly popular weak acid is acetic acid, which is present in vinegar.

• Acetic acid, commonly known as ethanolic acid, is a liquid organic chemical that is colourless.

• The amount of the original acid that has been ionised in the solution is represented by the acid ionisation.

• As a result, the numerical value of Ka represents the acid's strength. Stronger acids than weaker acids with relatively lower Ka values include weak acids with substantially higher Ka values.

Important Points

• Fluorine-containing chemical compounds include hydrogen fluoride.

• It can exist as a colourless vapour, seething liquid, or as a substance that has been dissolved in water.

• Hydrofluoric acid is what hydrogen fluoride is known as when it dissolves in water.

• The inorganic substance nitric acid has the formula HNO3.

• This mineral acid is extremely corrosive.

• One of the many industrial uses for hydrochloric acid (HCl), a colourless, potent mineral acid, is the creation of the hydrochloride salt when it is combined with an organic base.

Q24. Answer: (b) 1.98 m

Shortcut Trick

Ratio of parts = 7 : 11

Smaller part (7 units) = 77 cm

1 unit = 77 ÷ 7 = 11 cm

Total length = (7 + 11) units = 18 units

Total length = 18 × 11 = 198 cm = 1.98 m

Therefore The correct answer is 1.98 m.

Alternate Method

Given: Ratio of parts = 7 : 11; Smaller part = 77 cm.

Formula Used: Total Length = Part 1 + Part 2

7 units

11 units

Smaller = 77 cm

Larger = ?

Total Unbroken Stick

=> Let the two parts be 7x and 11x.

=> According to the question, 7x = 77 cm

=> x = 77 ÷ 7 = 11 cm

=> Length of the larger part = 11x = 11 × 11 = 121 cm

=> Total length of the unbroken stick = 77 + 121 = 198 cm

=> Conversion to meters: 198 ÷ 100 = 1.98 m

Therefore The correct answer is 1.98 m.

Additional Information

Ratio and Proportion

Ratio is the comparison of two quantities of the same unit. If a : b is given and the value of one part is k, the actual values are ak and bk.

Total from Ratios

If parts are in ratio a : b, the total is proportional to (a + b). Total = (Sum of ratio parts) × (Value of one unit).

Unit Conversion

1 meter (m) = 100 centimeters (cm). To convert cm to m, divide the value by 100.

Difference between Parts

The difference between the parts is proportional to |a − b|. Here, difference = (11 − 7) units = 4 units = 44 cm.

Q25. Answer: (c) 16.5

Given:

The person walks 825 m in 3 minutes.

Concept used:

1m/s = 18/5 km/h

Time × Speed = Distance

Calculation:

3 minutes = 180 seconds

According to the concept, his speed

=> 825 ÷ 180

=> 55/12 m/s

=> (55/12 × 18/5) km/h

=> 33/2 km/h

=> 16.5 km/h

Therefore His speed is 16.5 km/h.

Q26. Answer: (d) Calcutta

The correct answer is Calcutta.

Key Points

• In 1856, the kingdom of Awadh was formally annexed to the British Empire and the conquest happened in stages.

• The Subsidiary Alliance had been imposed on Awadh in 1801; by the terms of this alliance, the Nawab had to disband his military force, allow the British to position their troops within the kingdom, and act in accordance with the advice of the British Resident who was now to be attached to the court.

• Deprived of his armed forces, the Nawab became increasingly dependent on the British to maintain law and order within the

kingdom and he could no longer assert control over the rebellious chiefs and taluqdars.

• In the meantime, the British became increasingly interested in acquiring the territory of Awadh as they felt that the soil there was good for producing indigo and cotton, and the region was ideally located to be developed into the principal market of Upper India.

• By the early 1850s, moreover, all the major areas of India had been conquered: the Maratha lands, the Doab, the Carnatic, the Punjab and Bengal & the takeover of Awadh in 1856 was expected to complete a process of territorial annexation that had begun with the conquest of Bengal almost a century earlier.

• Nawab Wajid Ali Shah was dethroned and exiled to Calcutta on the plea that the region was being misgoverned.

• The British government also wrongly assumed that Wajid Ali Shah was an unpopular ruler, on the contrary, he was widely loved, and when he left his beloved Lucknow, there were many who followed him all the way to Kanpur singing songs of lament.

Q27. Answer: (a) stagflation

The correct answer is stagflation.

Key Points

• An economy that is suffering both rising inflation and stagnant economic output is said to be in stagflation.

• Stagflation was initially identified in the 1970s when an oil shock caused high unemployment and rapid inflation in many industrialised nations.

• Slow economic development and relatively high unemployment, sometimes known as economic stagnation, are the hallmarks of stagflation, which is also characterised by rising prices (i.e., inflation).

• An alternative definition of stagflation is a time when there is both inflation and a fall in the GDP.

Important Points

• A needed return's inflation risk compensation is represented by the inflation premium component.

• The difference between the actual gross domestic product (GDP) at the present and the GDP that would be present if an economy were experiencing full employment is known as the inflationary gap, a macroeconomic concept.

• Policies to boost the economy and fight deflation are referred to as reflation.

Q28. Answer: (d) Maharashtra

The correct answer is Maharashtra.

Key Points

• Tarapur Atomic Power station is located in Tarapur, Maharashtra.

• It was the first commercial atomic power station of India commissioned on 28th October 1969.

• It was commissioned under 123 agreements signed between India, the United States, and International Atomic Energy Agency.

• The station is operated by the National power corporation of India.

Additional Information

Other important Atomic Power stations in India -

Nuclear Power Plant(P.P)	Location
Kaiga Atomic Power plant	Karnataka
Kakarapar Atomic power station	Gujarat
Narora Nuclear power plant	Uttar Pradesh
Kalapakkam Nuclear plant	Tamil Nadu
Rawatbhata Nuclear P.P	Rajasthan
Tarapur Nuclear P.P	Maharashtra
Kudankulam Nuclear P.P	Tamil Nadu

Q29. Answer: (c) 36

Given:

A solid metallic cone of diameter 36 cm and height 12 cm is melted and made into identical solid spheres each of radius 3 cm.

Concept used:

Since the metallic cone is melted and made into identical solid spheres, the volume of the metallic cone and the total sum of the volumes of the solid spheres must be equal.

Volume of a sphere = $(4\pi R^3)/3$

Where R is the radius

Volume of a cone = (π × R2 × H)/3

where R = Radius of the base, H = Height

Calculation:

Radius of the base of the cone = 36/2 = 18 cm

Now, the volume of the cone

=> (π × 18^2 × 12)/3 cm^2

Let N number of spheres can be made.

According to the concept,

N × (4π 3^3)/3 = (π × 182 × 12)/3

=> N = (18^2 × 12)/(4 × 3^3)

=> N = 36

Therefore 36 spheres can be made.

Q30. Answer: (d) income effect

The correct answer is income effect.

Key Points

• The change in demand for a commodity or service brought on by a shift in a consumer's purchasing power as a result of a change in real income is known as the income effect in microeconomics.

• This adjustment may be brought about by an increase in salaries, for example, or by the release of funds from an existing income due to a drop in the cost of the item being purchased.

• The income effect is an expression of how changes in relative market prices and incomes impact consumption patterns for consumer goods and services.

• Consumer choice theory links preferences to consumption expenditures and consumer demand curves.

• When real consumer income increases, consumers will desire more of the typical economic items to buy.

Important Points

• The substitution effect is the decline in sales of a product that results from customers switching to less expensive substitutes when the price of the product increases.

• The change in output that results from using one extra unit of a certain input, given that the quantities of other inputs are held constant, is known as the marginal product or marginal physical productivity of an input (factor of production).

• The set of all conceivable consumption bundles that a customer may afford, given the prices of the commodities they have access to and their income, is known in economics as a budget set or the opportunity set facing a consumer.

Q31. Answer: (d) Africa

The correct answer is Africa.

Key Points

• Negroid (also known as Congoid) is a defunct racial category that includes a variety of people who are native to Southern Africa.

• It extends from the southern Sahara desert in the west to the African Great Lakes in the southeast, as well as to isolated regions of South and Southeast Asia (Negritos).

• The phrase comes from outdated ideas of race as a biological category.

• Members of the Göttingen School of History first proposed the idea of categorising people into three races in the 1780s; it was later developed by Western academics in the context of "racist ideologies" during the colonial era under the names Caucasoid, Mongoloid, and Negroid (originally called "Ethiopian").

Important Points

• A person from Sub-Saharan Africa was referred to as a negroid.

• These people were referred to as the "Negroid race."

• Humans used to categorise people into one of three races.

• Negroid, Mongoloid, and Caucasoid were the names given to these races.

• There is just one human race, according to modern science.

Q32. Answer: (d) 32

Given:

Measures of the diagonals of the rhombus are 8 cm and 16 cm.

Area of the square = Area of the rhombus

Concept used:

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Area of a rhombus = Product of two diagonals ÷ 2

Area of a square = side²

Perimeter of a square = 4 × side

Calculation:

Area of the rhombus = (8 × 16)/2 = 64 cm²

According to the question,

Area of the square = 64 cm2

The measure of each side of the square = √64 = 8 cm

Now, the perimeter of the square = 4 × 8 = 32 cm

Therefore The perimeter of the square is 32 cm.

Q33. Answer: (d) Madhya Pradesh

The correct answer is Madhya Pradesh.

Key Points

• The total forest cover of MP is 77,414 sq km.

• In terms of area, Madhya Pradesh has the largest forest cover in the country followed by Arunachal Pradesh, Chhattisgarh, Odisha, and Maharashtra.

Additional Information

• In terms of forest cover as a percentage of their total geographical area, the top five states are

• Mizoram (85.41 per cent)

• Arunachal Pradesh (79.63 per cent)

• Meghalaya (76.33 per cent)

• Manipur (75.46 per cent)

• Nagaland (75.31 per cent).

Q34. Answer: (b) Neither conclusion I nor conclusion II follows.

The least possible Venn diagram is:

Conclusions:

I. Some goods are costly. → False (it is possible but not definite)

II. All costly are beautiful. → False (it is possible but not definite)

Hence, neither conclusion I nor conclusion II follows.

Q35. Answer: (d) Pushyabhuti dynasty

The correct answer is Pushyabhuti dynasty.

Key Points

• Harshavardhana belonged to the Pushyabhuti dynasty.

• Pushpabhuti dynasty is also known as Vardhana Dynasty.

• It was founded by Naravardhana close to the 5th or beginning of the 6th century A.D.

• The dynasty flourished under Prabhakarvardhana (father of Harshavardhana).

• He assumed the title of Maharajadhiraja.

• Harshavardhana succeeded the throne in 606 A.D.

• Harsha was also known as Sakalottarapathanatha.

• He conquered Magadha.

• He established his capital at Kannauj.

• His empire extended from Punjab to northern Orissa and from the Himalayas to the bank of Narmada.

• The period of Harsha is well documented in Harshacharitra written by Banabhatta.

• Chinese scholar Hiuen-Tsang visited Harsha's court in 631 A.D.

• The empire came to an end along with the death of Harshavardhana in 647 A.D.

• Harshavardhan wrote three Sanskrit plays viz. Nagananda, Ratnavali and Priyadarshika.

• Hiuen-Tsang mentioned the grand assembly held at Kannauj in 643 A.D. which was attended by twenty kings, four thousand Buddhist monks and about three thousand Jains and Brahmans.

• He also organised Mahamoksha Harishad, a religious festival, at Prayaga (Allahabad).

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Q36. Answer: (b) Rs. 13.50

Given:

Karisma has been spending Rs. 5,400 on the purchase of an item every year for the past three years.

She paid for the item in the first year, Rs. 24 in the second year and Rs. 14.40 in the third year. (per unit)

Concept used:

Total = Average × Number of entities

Calculation:

In the first year, she got

=> 5400/9

=> 600 units of the item

In the second year, she got

=> 5400/24

=> 225 units of the item

In the third year, she got

=> 5400/14.4

=> 375 units of the item

Total units of item acquired by her = 600 + 225 + 375 = 1200 kg

Total price paid by her = 5400 × 3 = Rs. 16200

Now, the average per-unit price that she paid for this item in the three years

=> 16200/1200

=> Rs. 13.50

Therefore The average per-unit price that she paid for this item in the three years was Rs. 13.50.

Q37. Answer: (d) 66

Shortcut Trick

Find the HCF of 24 and 18 by checking the largest number dividing both: 6.

Find the LCM using the ratio method: 24 : 18 → 4 : 3. LCM = 24 × 3 = 72.

Required Difference = LCM − HCF = 72 − 6 = 66.

Therefore The correct answer is 66.

Alternate Method

Given: The numbers are 24 and 18.

Formula Used: Difference = LCM(a, b) − HCF(a, b)

=> Prime factorization of 24 = 2 × 2 × 2 × 3 = $2^3 \times 3^1$

=> Prime factorization of 18 = 2 × 3 × 3 = $2^1 \times 3^2$

=> Highest Common Factor (HCF) = $2^1 \times 3^1 = 6$

=> Least Common Multiple (LCM) = $2^3 \times 3^2 = 8 \times 9 = 72$

=> Required Difference = 72 − 6 = 66

Therefore The correct answer is 66.

Additional Information

Product Rule of LCM and HCF

The product of two numbers is always equal to the product of their LCM and HCF (a × b = LCM × HCF).

Co-prime Numbers

For any two co-prime numbers, the HCF is always 1 and the LCM is the product of the two numbers.

HCF and LCM Relation

The HCF of any group of numbers is always a factor of their LCM.

Q38. Answer: (b) Tuesday

Amit's birthday on 16th April 2020 was on Thursday.

Number of odd days from 17th April 2020 to 2nd June 2020 = 14 + 3 + 2 = 19

• This implies that 16th April 2020 + 19 odd days = 2nd June 2020

(Note: A month with 31 days has 3 odd days and a month with 30 days has 2 odd days. May has 31 days so it has 3 odd days)

19 when divided by 7, leaves 5 as remainder.

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• Thursday + 5 odd days = Tuesday

So, it was Tuesday on 2nd June 2020.

Hence, 'Tuesday' is the correct answer.

Q39. Answer: (c) Chandigarh

The correct answer is Chandigarh.

Key Points

• Le Corbusier, a renowned architect, created the Palace of Assembly, a legislative building in Chandigarh, India.

• The Legislative Assembly, Secretariat, and High Court are three of the structures that make up The Capitol Complex.

• Punjab had to find a new capital after being separated in 1947 as a result of India's independence because Lahore was now part of Pakistan.

• As a result, Jawaharlal Nehru, the first prime minister of India, hired Le Corbusier to design the new city of Chandigarh.

• A city "unbound by the traditions of the past, a symbol of the nation's faith in the future" was to be created, according to the design brief.

Important Points

• Le Corbusier was a French-Swiss architect, designer, painter, writer, and advocate of modern architecture.

• Having been born in Switzerland, he acquired French citizenship in 1930.

• In the five decades of his work, he designed structures in North and South America, Europe, Japan, and India.

• The architectural work of Le Corbusier, an Outstanding Contribution to the Modern Movement, was inscribed as one of 17 Le Corbusier projects across seven nations on the UNESCO World Heritage List on July 17, 2016.

Q40. Answer: (c) 28 cm

Given:

The total surface area of a solid hemisphere is 1848 cm2.

Concept used:

Total surface area of a hemisphere = $3\pi R2$

where R is the radius of the hemisphere

Diameter = 2 × Radius

Calculation:

Let the radius of the hemisphere be R.

According to the concept,

$3\pi R^2 = 1848$

$\Rightarrow R^2 = 1848/3\pi$

$\Rightarrow R^2 = 1848/(3 \times 22/7)$

$\Rightarrow R^2 = (1848 \times 7)/66$

$\Rightarrow R^2 = 196$

$\Rightarrow R^2 = 14^2$

$\Rightarrow R = 14$ (Because Radius can't be negative)

Now, the diameter of the flat surface of the hemisphere

$\Rightarrow 2 \times 14$

$\Rightarrow 28$ cm

Therefore The diameter of the flat surface of the hemisphere is 28 cm.

Q41. Answer: (b) 5255

The logic followed here is:

Hence, '5255' is the correct answer.

Q42. Answer: (c) 14 : 198

The logic/pattern followed here is:

1. $22 : 485 \rightarrow 22^2 + 1 = 484 + 1 = 485$

2. $20 : 401 \rightarrow 202 + 1 = 400 + 1 = 401$

3. $14 : 198 \rightarrow 142 + 1 = 196 + 1 = 197 \neq 198$

4. $18 : 325 \rightarrow 182 + 1 = 324 + 1 = 325$

Hence, '14 : 198' is the odd one out.

Q43. Answer: (c) Rs. 2,865.20

Shortcut Trick

Loss of 30% means the Selling Price is 70% of the Cost Price (CP).

=> 70% = Rs. 1,729

To make a gain of 16%, the required Selling Price should be 116% of CP.

=> Required SP = (1,729 ÷ 70) × 116

=> Required SP = 24.7 × 116 = Rs. 2,865.20

Therefore The correct answer is Rs. 2,865.20.

Alternate Method

Given:

First Selling Price (SP1) = Rs. 1,729

Loss Percentage = 30%

Desired Gain Percentage = 16%

Step 1: Find the Cost Price (CP)

=> CP = (SP1 × 100) ÷ (100 − Loss%)

=> CP = (1,729 × 100) ÷ (100 − 30)

=> CP = (1,729 × 100) ÷ 70

=> CP = 24.7 × 100 = Rs. 2,470

Step 2: Find the new Selling Price (SP2)

=> SP2 = CP × (100 + Gain%) ÷ 100

=> SP2 = 2,470 × (100 + 16) ÷ 100

=> SP2 = 2,470 × (116 ÷ 100)

=> SP2 = 2,470 × 1.16

=> SP2 = Rs. 2,865.20

Therefore The correct answer is Rs. 2,865.20.

Additional Information

Basic Profit and Loss Formulas

Profit = SP − CP; Loss = CP − SP. Profit % = (Profit ÷ CP) × 100; Loss % = (Loss ÷ CP) × 100.

Marked Price (MP) and Discount

Selling Price = Marked Price − Discount. Discount % = (Discount ÷ MP) × 100.

Effective Rate for Successive Changes

For two successive changes of a% and b%, the effective change is [a + b + (ab ÷ 100)]%.

Q44. Answer: (d) 656

Given:

27 × 3 × 896 ÷ √3136 = y + 640

Concept used:

Calculation:

27 × 3 × 896 ÷ √3136 = y + 640

=> 27 × 3 × 896 ÷ 56 = y + 640

=> 27 × 3 × 16 = y + 640

=> 1296 = y + 640

=> y = 1296 - 640

=> y = 656

Therefore The value of y is 656.

Q45. Answer: (c) Ranchi

The correct answer is Ranchi.

Key Points

• The ninth edition of the National Open Race Walking Championships, a qualifying event for the 2022 year's World Championships, was held in Ranchi, Jharkhand.

• The championships will have 35km and 20km race walk events for men and 20km events for women.

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• There will also be 10km events for both U-10 men and women.

• The championships will also be a qualifying event for the World Championships to be held in Eugene, USA, from July 15-24.

Q46. Answer: (d) Rs. 40,000

Given:

A certain sum was invested at 40% p.a. compound interest for two years. (compounded annually)

When the interest was compounded half-yearly, the amount payable on maturity after two years would have been Rs. 4,544 more.

Concept used:

Compound interest, CI = P(1 + R/100)^N - P

where

P = Principal amount

R = Rate of interest per year

N = Time in years

Calculation:

Let the sum invested be P.

The amount becomes according to the initial conditions = P(1 + 40/100)2

When the interest compounded half-yearly,

Rate of interest (R) = 40 ÷ 2 = 20%

Time (N) = 2 × 2 = 4

According to the concept,

P(1 + 20/100)^4 = P(1 + 40/100)2 + 4544

=> P × 1.2^4 - P × 1.4^2 = 4544

=> P × 2.0736 - P × 1.96 = 4544

=> P(2.0736 - 1.96) = 4544

=> P × 0.1136 = 4544

=> P = 4544/0.1136

=> P = 40,000

Therefore The sum invested was Rs. 40,000.

Q47. Answer: (b) Red Sea

The correct answer is Red sea.

Key Points

• The Red Sea is a confined body of water that stretches 1,930 kilometres southeast from Suez, Egypt, to the Bab el-Mandeb Strait, where it joins the Gulf of Aden and, ultimately, the Arabian Sea.

• The Gulf of Aqaba (Elat) and the Gulf of Suez must be viewed geologically as the northern extension of the same structure.

• The coasts of Saudi Arabia and Yemen are to the east, while those of Egypt, Sudan, and Eritrea are to the west.

• It has a maximum width of 190 miles, a maximum depth of 3,040 metres (9,974 ft), and an area of over 174,000 miles (450,000 square km). Some of the world's saltiest and hottest waters can be found in the Red Sea.

• It is one of the busiest waterways in the world, bringing maritime traffic between Europe and Asia and connecting to the Mediterranean Sea via the Suez Canal.

• Its name comes from the colour shifts in its waters that have been noticed.

Important Points

• The North and Central European Plain, Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland, Russia, and Sweden all enclose the Baltic Sea, which is a branch of the Atlantic Ocean.

• The Sulu Archipelago, Sulu Sea, and Mindanao Island in the Philippines, the Sangihe Islands series, Sulawesi's Minahasa Peninsula, northern Kalimantan in Indonesia, and the western Pacific Ocean's Celebes Sea all abut the sea on the Celebes Sea's northern and western edges, respectively.

• A peripheral Mediterranean sea of the Atlantic Ocean, the Black Sea is located between Europe and Asia, east of the Balkans, south of the East European Plain, west of the Caucasus, and north of Anatolia.

Q48. Answer: (c) 37

Shortcut Trick

Initial Average of 2 numbers = 46

New Average after adding the 3rd number = 43

Change in Average = 43 − 46 = −3
Third Number = New Average + (Initial Count × Change)
=> 43 + (2 × (−3)) = 43 − 6 = 37
Therefore The correct answer is 37.
Alternate Method
Given: Average of 2 numbers = 46, Combined average of 3 numbers = 43.
Formula Used: Sum of observations = Average × Number of observations
=> Sum of the first 2 numbers = 46 × 2 = 92
=> Sum of all 3 numbers = 43 × 3 = 129
=> Third number = (Sum of 3 numbers) − (Sum of 2 numbers)
=> Third number = 129 − 92
=> Third number = 37
Therefore The correct answer is 37.
Additional Information
Arithmetic Mean
The average is the sum of all elements divided by the total count: Average = (∑x) ÷ n.
Weighted Average
If two groups have averages A1 and A2 with n1 and n2 terms, the combined average = (n1A1 + n2A2) ÷ (n1 + n2).
Effect of Change
If a constant k is added to every number in a set, the average also increases by k. If multiplied by k, the average is multiplied by k.

Q49. Answer: (a) Rs. 1,281

Given:
The length and the width of a rectangular plot of land are 10.5 m and 8 m, respectively.
Concept used:
Area of a rectangle = Length × Width
Calculation:
Area of the rectangular plot = 10.5 × 8 = 84 m²
Cost of laying grass in the entire plot
=> 84 × 15.25
=> Rs. 1,281
Therefore The cost of grass in the entire plot is Rs. 1,281.

Q50. Answer: (a) Rs. 8,500

Given:
Sunidhi earned an average of Rs. 6,250 per month during the past 12 months.
During the first 10 months, her average earnings per month were Rs. 5,800.
Concept used:
Total = Average × Number of entities
Calculation:
Sum of the earnings received by her during the entire year
=> 6250 × 12
=> Rs. 75000
Sum of the earnings received by her in the first 10 months
=> 5800 × 10
=> Rs. 58000
Sum of the earnings received by her in the last 2 months
=> 75000 - 58000
=> 17000
Average earnings received by her in the last 2 months
=> 17000/2
=> Rs. 8500

Therefore Sunidhi's average earnings per month during the last two months of the period was Rs. 8500.

Q51. Answer: (c) FBESUM

The pattern followed here is:

Similarly,

Hence, ‘FBESUM’ is the correct answer.

Q52. Answer: (b) 55°

Shortcut Trick

In a circle, angles subtended by the same arc at the circumference are equal. Therefore angle ABD = angle ACD = 35°.

Since AB is the diameter, the angle in the semicircle angle ADB = 90°.

In right-angled ΔADB, the sum of acute angles is 90°.

angle BAD = 90° − angle ABD => 90° − 35° = 55°.

Therefore The correct answer is 55°.

Alternate Method

Given: ABCD is a cyclic quadrilateral with diameter AB and angle ACD = 35°.

Formula Used: Angle in a semicircle is 90°; Angles in the same segment are equal; Sum of angles in a triangle = 180°.

=> In the circle, angle ACD and angle ABD are subtended by the same arc AD.

=> Therefore angle ABD = angle ACD = 35°

=> Since AB is the diameter, the angle subtended at the circumference is 90°.

=> Therefore angle ADB = 90°

=> In ΔADB, sum of angles = 180°

=> angle BAD + angle ADB + angle ABD = 180°

=> angle BAD + 90° + 35° = 180°

=> angle BAD = 180° − 125°

=> angle BAD = 55°

Therefore The correct answer is 55°.

Additional Information

Angle in a Semicircle

Any angle subtended by the diameter at any point on the circumference of the circle is always a right angle (90°).

Angles in the Same Segment

Angles subtended by the same arc or chord at any point on the remaining part of the circle are equal.

Cyclic Quadrilateral Property

In a cyclic quadrilateral, the sum of each pair of opposite angles is 180° (angle A + angle C = 180° and angle B + angle D = 180°).

Q53. Answer: (b) Brazil

The correct answer is Brazil.

Key Points

• PSLV-C51 is the Indian Polar Satellite Launch Vehicle (PSLV) program's 53rd mission.

• On February 28, 2021, the Polar Satellite Launch Vehicle (PSLV)-C51 was launched with the main payload from Brazil, INPE's Amazônia-1, and 18 smaller ride-sharing tiny satellites.

• NSIL is launching its first focused commercial product.

• The PSLV-C51 was launched from the Satish Dhawan Space Centre's First Launch Pad in Sriharikota, Andhra Pradesh.

• The PSLV-C51/Amazonia-1 was NewSpace India Limited's (NSIL), a government of India company under the Department of Space, first dedicated commercial mission.

• PSLV has now launched 342 client spacecraft from 34 countries into orbit, bringing the total number of customer satellites launched by PSLV to 342 from 34 countries.

Q54. Answer: (b) km io

The code for each word is shown below:

Code for:

money - io

bank - km

Hence, ‘km io’ is the correct answer.

Q55. Answer: (d) Neither conclusion I nor II follows.

The least possible Venn diagram is:

Conclusions:

I. At least some mobiles are computers. → False (it is possible but not definite)

II. At least some phones are laptops. → False (As no laptop is a computer and all phones are computers → No phone is laptop)

Hence, neither conclusion I nor II follows.

Q56. Answer: (c) Only conclusion II is true

Statement:

$W = H \leq G < C \geq T = L > M$

Conclusions:

I. $W < T$ → False (As $W = H \leq G < C \geq T$ → a definite relation between W and T cannot be determined)

II. $C > M$ → True (As $C \geq T = L > M$ → $C > M$)

Hence, only conclusion II is true.

Q57. Answer: (a) Muhammad Tughluq

The correct answer is Muhammad Tughluq.

Key Points

• Muhammad Tughluq had the Begumpuri mosque constructed as the primary mosque for Jahanpanah, the "Sanctuary of the World," his new city in Delhi.

• One of the biggest mosques in the city is called Begampuri Masjid, and it is situated close to Aurobindo Ashram on Sri Aurobindo road in Begampur, close to Delhi.

• Khan-i-Jahan, the son of Muqbal Khan, the Prime Minister of Firuz Shah, constructed it in the 12th century.

• Muhammad bin Tughlaq (1325–51), the Delhi Sultan, founded the fourth mediaeval city of Delhi in the years 1326-1327.

Important Points

• From February 1325 until his death, Muhammad ibn Tughlaq served as the Delhi Sultanate's eighteenth ruler.

• He was Ghiyath al-Din Tughluq's (the Tughlaq dynasty's founder) eldest son.

• Ghiyas-ud-din Tughlaq, who ruled the Sultanate of Delhi from 1320 to 1325, was the founder of the Tughluq dynasty in India.

• Tughluqabad was the city he founded.

• The ninth ruler of Delhi's Mamluk dynasty was Ghiyas ud din Balban.

• The Ghurid monarch Muhammad Ghori's general was Qutb ud-Din Aibak.

Q58. Answer: (d) Ravindra

Four students - Ravindra, Shiva, Triveni and Nagesh, who want to be selected in the basketball team.

1. Nagesh is shorter than Ravindra but taller than Triveni.

Ravindra > Nagesh > Triveni

2. Shiva is shorter than Nagesh but taller than Triveni.

Nagesh > Shiva > Triveni

From 1 and 2, we get:

Ravindra > Nagesh > Shiva > Triveni

If the coach wants to select the tallest student among them, then Ravindra will be selected.

Hence, ‘Ravindra’ is the correct answer.

Q59. Answer: (a) 84

Given:

The LCM of the two numbers is 35 times their HCF. The LCM and HCF differ by 238

The difference between the numbers is 14.

Concept used:

LCM × HCF = The Product of two numbers

$(A + B)2 = (A - B)2 + 4AB$

Calculation:

Let the HCF and LCM be H & L respectively.

According to the question,

L = 35 × H ....(1)

L - H = 238 ....(2)

=> 35H - H = 238 (From 1)

=> 34H = 238

=> H = 238/34

=> H = 7

Now, L = 35 × 7

=> L = 245

So, the product of HCF and LCM = 245 × 7 = 1715

Let the aforementioned numbers be P and Q (P > Q).

Sum of the two numbers = (P + Q)

According to the concept,

PQ = 1715

According to the question,

P - Q = 14

=> (P - Q)2 = 142

=> (P - Q)2 + 4PQ = 142 + 4PQ (Adding 4PQ on both side)

=> (P - Q)2 + 4PQ = 142 + 4 × 1715 (Because PQ = 1715)

=> (P + Q)2 = 7056

=> $(P + Q)^2 = 84^2$

=> (P + Q) = 84 (Because Here, the sum of the numbers can't be negative)

Therefore The sum of the numbers is 84.

Q60. Answer: (a) Palagummi Sainath

The correct answer is Palagummi Sainath.

Key Points

• The Fukuoka Grand Prize for 2021 has been given to journalist Palagummi Sainath.

• He is a dedicated journalist who has persisted in looking into India's poor farming villages and documenting the reality of the people who live there.

• The Fukuoka City International Foundation and the Japanese city of Fukuoka established the prize, which is granted to people and organisations who seek to preserve Asian culture.

• There are two other award categories in addition to the Grand Prize: academics and culture.

• Professor Kishimoto Mio, a Japanese historian with expertise in the socio-economic history of China during the Ming-Qing dynasty, received the Academics Prize.

Important Points

• Born in Chennai, Palagummi Sainath has held positions as vice-editor of the political magazine Blitz and editor of The Hindu.

• The journalist received the 1995 Lorenzo Natali Prize for Journalism from the European Commission and the 2000 Amnesty International Global Human Rights Journalism Prize.

• In 2001, he was awarded the Boerma Prize by the Food and Agriculture Organization of the United Nations, and in 2007, he was given the Ramon Magsaysay Award for distinguished service to Asian media.

Additional Information

• Indian historian Romila Thapar specialises in ancient Indian history, a field in which she is a leader.

• Ramachandra "Ram" Guha is an Indian historian, environmentalist, author, and public intellectual whose areas of interest include economics, the social and political history of cricket, and historical and present issues related to the environment.

• Ustad Amjad Ali Khan, an Indian classical sarod player who was born on October 9, 1945, is most renowned for his crisp and quick ekhara taans.

Q61. Answer: (a) 40

The correct answer is 40.

Key Points

• For Assembly elections (February - March 2022) in Uttar Pradesh, Uttarakhand and Punjab, the expenditure limit for legislative assembly candidates was revised to Rs. 40 lakh in January 2022.

• According to a notification from the Law Ministry, the increased value of Rs. 40 lakh would be applicable in Uttar Pradesh, Uttarakhand, and Punjab and Rs. 28 lakh in Goa and Manipur.

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• The most recent significant change to candidate spending caps was made in 2014, with the exception of a 10% increase in response to the COVID-19 pandemic in 2020.

• In 2020, the EC established a committee to investigate the spending cap.

• Political parties, key election officials, and election observers were invited to provide comments by the committee.

• The committee discovered a significant rise in the number of voters and the Cost Inflation Index during 2014.

• It also had a role in the evolving campaigning strategies, which eventually moved toward virtual campaigns.

Important Points

• In order to elect all 403 members of the 18th Uttar Pradesh Legislative Assembly, elections for the assembly were held in seven phases from 10 February to 7 March 2022.

• In order to choose the 70 members of the Uttarakhand Legislative Assembly, elections were held on February 14, 2022.

• Punjab held its legislative assembly elections on February 20, 2022, to choose the 117 members of the province's 16th assembly.

Q62. Answer: (b) Rs. 99

Given:

The price of item A was 2/3 of the price of item B, while the price of item C was 3/4 of the price of item B.

The price of item A was Rs. 88

Calculation:

Let the price of item B be Q.

The price of item A = 2Q/3

The price of item C = 3Q/4

According to the question,

2Q/3 = 88

=> Q = (88 × 3)/2

=> Q = 132

Now,

3Q/4 = (3 × 132)/4

=> 99

Therefore The price of item C was Rs. 99.

Q63. Answer: (d) Deepika Kumari

The correct answer is Deepika Kumari.

Key Points

• Deepika Kumari won the gold medal in the women's individual recurve event at the Archery World Cup Stage 3 held in Paris in June 2021.

• At the Archery World Cup Stage 3 competition in Paris, the talented Indian archer Deepika Kumari set a new world record by winning three consecutive gold medals.

• With four gold medals, India took first place in the medal count.

• Abhishek Verma won the fourth gold medal for the compound section's men's solo event.

• Indian professional archer Deepika Kumari competes in the archery event and is now rated No. 1 in the world.

• She won the women's individual recurve gold medal at the 2010 Commonwealth Games.

Important Points

• The World Archery Federation has ranked Ankita Bhakat, an Indian recurve archer, as the 20th best in the world.

• Since joining the national recurve squad in 2007, Bombayla Devi Laishram has competed internationally for India as an archer.

• She has won four gold, five silver, and four bronze medals at different Archery World Cup competitions, as well as a silver medal at the World Archery Championships.

• Dola Banerjee is an Indian sportswoman who competes in archery.

Q64. Answer: (d) 45

Given:

A and B can do a piece of work together in 48 days.

B alone can do the work in 60 days.

The duo starts working together, but B leaves 15 days before the work gets over.

Concept used:

Total work = Work done per day × Total time taken

Calculation:

LCM (48, 60) = 240

Let the total work be the individual time taken by the workers.

Now, the total work = 240 units

B does a day = 240/60 = 4 units of work

A and B together do a day = 240/48 = 5 units of work

=> A does a day = (5 - 4) units of work

=> A does a day = 1 unit of work

Let the total work be completed in K days.

So, A and B will work for K and (K - 15) days.

According to the question,

1 × K + 4 × (K - 15) = 240

=> K + 4K - 60 = 240

=> 5K = 240 + 60

=> 5K = 300

=> K = 300/5

=> K = 60

Now, the duo worked together for

=> (K - 15) days

=> (60 - 15) days

=> 45 days

Therefore 45 days A and B worked together.

Q65. Answer: (a) It requires decreasing inputs over time.

The correct answer is It requires decreasing inputs over time.

Key Points

• The introduction of new, high-yielding varieties into emerging countries starting in the middle of the 20th century, led to a significant increase in the production of food grains (particularly wheat and rice).

• Mexico and the Indian subcontinent saw their first stunning successes.

• In order to achieve their high yields, the new types need to use significant quantities of chemical fertilisers and pesticides, which raises concerns about the expense and potential negative impacts on the environment.

Important Points

• The collection of research and technology transfer programmes known as the "Green Revolution" took place between 1950 and the late 1960s and significantly enhanced agricultural production throughout much of the world.

• High-yielding varieties (HYVs) of cereals, particularly dwarf wheat and rice, were adopted as a result of the initiatives.

• It was connected to mechanised farming, artificial fertilisers, agrochemicals, controlled water supply (typically using irrigation), and innovative farming techniques.

• These were all considered to be part of a "bundle of activities" that would replace "conventional" technology and be adopted as a whole.

Q66. Answer: (d) South-East

According to given conditions,

Clearly, Point X is to the South-East of Point K.

Hence, ‘South-East’ is the correct answer.

Q67. Answer: (a) Pradhan Mantri Kaushal Vikas Yojana 3.0

The correct answer is Pradhan Mantri Kaushal Vikas Yojana 3.0.

Key Points

• A pilot initiative was started by the Ministry of Skill Development and Entrepreneurship to bring Kashmir's Namda craft back to life.

• The Pradhan Mantri Kaushal Vikas Yojana 3.0 saw the launch of the Namda Craft Pilot Project.

• 25 batches are required for implementation. Three training cycles are required for these 25 batches.

• Three and a half months will be allocated to each training cycle.

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• 2,250 persons will gain from the project.

• Through Recognition of Prior Learning, the project will improve people's learning (a component of Pradhan Mantri Kaushal Vikas Yojana).

Important Points

• A sheepskin rug is known as a Namda.

• The craft uses a felting technique rather than the standard weaving procedure.

• The majority of floor pieces made using Namda craft are for floors.

• Additionally, mattresses and bed covers are made from it.

• There is a tradition of sitting on the floor in every Kashmiri household, regardless of wealth. In the winter, the floor gets very chilly.

• Because of this, Namda craft evolved in Kashmir.

Additional Information

• The capacity development scheme is an ongoing MoSPI (Ministry of Data & Programme Implementation) central sector programme with the general goal of increasing infrastructural, technical, and human resources in order to make reliable and timely official statistics available.

• The Pradhan Mantri Vaya Vandana Yojana is a pension-insurance programme that offers security to senior folks.

• A Rozgar Mela is a gathering of businesses and job seekers where applications and interviews are conducted for open positions.

Q68. Answer: (c) 148

Given:

Vimal secured 46% marks in the exam and failed to qualify in the exam by 10 marks.

If he secured 52% marks, he would have secured 8 marks more than what was the minimum qualifying marks.

Calculation:

Let the total marks in the exam be Q.

Vimal scored = 46% × Q = 0.46Q

Minimum passing marks = 0.46Q + 10

According to the question,

0.46Q + 10 = 52% × Q - 8

=> 0.46Q + 10 = 0.52Q - 8

=> 0.52Q - 0.46Q = 10 + 8

=> 0.06Q = 18

=> Q = 18/0.06

=> Q = 300

Now, the passing marks in the exam

=> 0.46 × 300 + 10

=> 148

Therefore The minimum marks one had to score to qualify in the exam were 148.

Q69. Answer: (a) R > U

1. R > U → True (As, R > T ≥ N > U → R > U)

2. N < Z → False (As, N > U = S ≤ Z → No definite relation between N and Z can be determined)

3. V < T → False (As, T ≥ N > U = S ≤ Z < V → No definite relation between V and T can be determined)

4. T = S → False (As, T ≥ N > U = S → T > S)

Hence, ‘R > U’ is the correct answer.

Q70. Answer: (d) 1000.100.10.1

The correct answer is 1000.100.10.1.

Key Points

• A network interface on a system is uniquely identified by its 32-bit IPv4 address.

• The format of an IPv4 address is typically four 8-bit fields separated by periods, printed in decimal digits.

• A byte of the IPv4 address is represented by each 8-bit field.

• Dotted-decimal format is a common name for this way of expressing the bytes of an IPv4 address.

• The network component and the host part are the additional divisions made in the IPv4 address's bytes.

• Each octet in IPv4 address can have a value from 0 to 255, but in option 4 the first octet value is 1000 which is not valid. Consequently, it can not be a valid IPv4 address.

Important Points

• The unique number allocated to the network is specified in the network component.

• The allocated class of the network is also identified by the network component.

• The portion of the IPv4 address that you give to each host is known as the host part.

• This machine on your network is identified by the host part specifically.

Q71. Answer: (a) Andhra Pradesh

The correct answer is Andhra Pradesh.

Key Points

• Jawahar Lal Nehru announced the formation of Andhra Pradesh as a separate state in 1952.

• In 1953, the first linguistic state of Andhra for Telugu-speaking people was formed.

• Constituent Assembly in 1948 appointed Linguistic Provinces Commission to enquire into the desirability of linguistic provinces.

• It was headed by Justice S. K. Dhar.

• The Commission advised against the organisation of states on a linguistic basis at that time because it might harm national unity and also it is administratively inconvenient.

• It recommended reorganization on the basis of administrative convenience rather than on a Linguistic basis.

• In 1953, Nehru appointed States Reorganisation Commission to examine the reorganization of the states of the Union.

• Members: Justice Fazl Ali, KM Panikkar & H Kunzru.

• States Reorganization Act 1956:

• It provided for 14 states and 6 centrally administered territories although opposed to the disintegration of Bombay & Punjab.

Q72. Answer: (c) 162

Given:

5 is added to one-third of the number, the sum is 59.

Calculation:

Let the number be Q.

One-third of Q = Q/3

According to the question,

5 + Q/3 = 59

=> Q/3 = 59 - 5

=> Q/3 = 54

=> Q = 54 × 3

=> Q = 162

Therefore The number is 162.

Q73. Answer: (c) 12 km, west

According to given conditions,

Clearly, point A is 12 km to the West of point F.

Hence, ‘12 km, west’ is the correct answer.

Q74. Answer: (c) QXJ

The pattern followed here is:

Hence, ‘QXJ’ is the correct answer.

Q75. Answer: (b) 100

Given:

(3/4) of a number is subtracted from (6/7) of 126

Calculation:

Let the number be X

According to question,

(6/7) × 126 - (3/4) × X = 33

108 - 33 = (3/4) × X

75 = (3/4) × X

X = 100

Therefore The number is 100.

Q76. Answer: (d) Assam

The correct answer is Assam.

Key Points

• The first-ever Bihu "Husori troupe" is stealing the show in Dibrugarh's Moran area since this is the first time young girls will be playing the Dhol, Pepa, Gagana, and Taal, which are typically played by men when performing Husori.

• The only Husori Troupe for girls in Assam and the first. Husori is typically performed by boys, however, girls can also do it.

• Lahori is also performed by boys.

• A crucial component of Rongali Bihu, "Husori" is sung on Cow Bihu, the first day of the festival.

• On this day, young men sing a Bihu song called "Husori" door to door while being guided by the elders.

Important Points

• Assam: (As of June 2022)

• Statehood: 26 January 1950

• Largest city: Guwahati

• Capital: Dispur

• Districts: 35

• Governor: Jagdish Mukhi

• Chief Minister: Himanta Biswa Sarma (BJP)

Q77. Answer: (a) SoftWorthy

The correct answer is SoftWorthy.

Key Points

• The coveted National Science Foundation Innovation-Corps (NSF I-Corps) Teams Award has been given to SoftWorthy in the US.

• The award-winning project of SoftWorthy, which was established in 2020, is dedicated to creating cutting-edge computational techniques for "stochastic modelling, design simulation, and sensitivity analysis of electronic devices like printed-circuit-boards (PCBs), which are essential for the development of cutting-edge technological applications like driverless cars and energy-efficient smart buildings.

• The business has been working to create cutting-edge software technology for carrying out engineering analysis.

• It is run by a group of Indian engineers who received their training at the Massachusetts Institute of Technology and Harvard University.

Important Points

• Zenefits has all the HR tools you need to manage your workforce effectively, including performance appraisals, org charts, and easy PTO tracking, among many other features.

• San Jose, California serves as the home base for the publicly traded Bloom Energy.

• It produces and sells on-site electricity-generating solid oxide fuel cells.

• An American business called Instacart provides grocery delivery and pickup services in both the US and Canada.

Q78. Answer: (c) Summer

If

• 'Autumn' is called 'Winter'

• 'Winter' is called 'Summer'

• 'Summer' is called 'Rainy'

• 'Rainy' is called 'Cloudy'

In winter season we definitely wear woollen garments and 'Winter' is called 'Summer'.

Therefore, in 'Summer' season we definitely wear woollen garments.

Hence, ‘Summer’ is the correct answer.

Q79. Answer: (b) Prasad

Varun, Kashyap, Anil, Johnson, Samson and Prasad are sitting in a row facing north but not necessarily in the same order.

1. Varun and Kashyap sit at the extreme ends.

2. Anil is sitting to the immediate left of Varun.

The above condition cannot be satisfied in Case I, so it is elimianted.

3. Only one person sits between Anil and Samson.

4. Johnson is not an immediate neighbour of Kashyap.

Johnson is sitting between Samson and Anil, as it is the only possible position for Johnson to occupy.

Remaining person Prasad is sitting to the immediate right of Kashyap as it is the only possible position for Prasad to occupy.

Therefore, the final arrangement will be as shown below:

Prasad is sitting to the immediate right of Kashyap.

Hence, 'Prasad' is the correct answer.

Q80. Answer: (a) 1988

The correct answer is 1988.

Key Points

• In India, the National Consumer Disputes Redressal Commission (NCDRC) was established in 1988 in accordance with the Consumer Protection Act of 1986.

• In New Delhi, it has its headquarters. A Supreme Court of India judge who is now sitting or has retired is in charge of the commission.

• Justice R K Agrawal, a former Supreme Court of India judge, is currently in charge of the commission.

• According to Section 21 of the Consumer Protection Act of 1986, the National Consumer must have the authority to hear complaints worth more than one crore as well as to appeal and review decisions made by State Commissions or District Fora, as the case may be.

Important Points

• To safeguard the interests of Indian consumers, the Indian Parliament passed the Consumer Protection Act, 1986 (COPRA).

• The Consumer Protection Act of 2019 took its place.

• It was created to facilitate the creation of consumer councils and other institutions for the resolution of consumer complaints and issues related to them.

• The law was passed by the Assembly in October 1986, and it became effective on December 24 of the same year.

• The law to the right was created prior to the COPRA act.

Q81. Answer: (c) Father's father

There are seven members, H, I, J, K, L, M and N, in a family.

1. H is K's mother's mother.

2. J and L are the only two children of H and M.

3. J is the only daughter of M.

4. N is the son of L and I.

By using the symbols in the table given below, we can draw the following family tree:

M is the grandfather of N, or we can say that M is N's father's father.

Hence, 'Father's father' is the correct answer.

Q82. Answer: (d) aabaca

Given sequence: a_ bca _ _ ca _ b _ _ abc

1. aaacba → aabc - aaac - acbb - aabc

2. bacaaa → abbc - aacc -aaba - aabc

3. abacaa → aabc - abac - acba - aabc

4. aabaca → aabc - aabc - aabc - aabc

• Here, aabc is repeated

Hence, 'aabaca' is the correct answer.

Q83. Answer: (b) Citizenship

The correct answer is the Citizenship of India.

Key Points

• Articles 5 to 11 of the Indian Constitution relate to the Citizenship of India.

• Citizenship comes under Part II of the Indian Constitution.

• It is borrowed from Britain's Constitution.

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• The Indian constitution prohibits Dual citizenship.

Important Points

• Methods to acquire citizenship:

1. By Birth
2. By Descent
3. By Registration
4. By Naturalisation
5. By Incorporation of Territory.

• Methods to lose citizenship:

1. By Renunciation
2. By Termination
3. By Deprivation

Additional Information

• Fundamental Duties are defined in Part IV-A of the Indian Constitution.
• Fundamental Duties are the moral obligations of all the citizens of India.
• There are 11 Fundamental duties.
• Fundamental Duties were added to the Constitution by 42nd Amendment of the Constitution in the year 1976.
• Part III of the Indian Constitution deals with the fundamental rights given to the citizens of India
• These rights are enshrined in Articles 12 to 35 of the Indian Constitution.

Q84. Answer: (b) 5

Given:

(162 ÷ 9) ÷ 3 - (343 ÷ 49) ÷ 7

Concept used:

Calculation:

(162 ÷ 9) ÷ 3 - (343 ÷ 49) ÷ 7

=> 18 ÷ 3 - 7 ÷ 7

=> 6 - 1

=> 5

Therefore The value of (162 ÷ 9) ÷ 3 - (343 ÷ 49) ÷ 7 is 5.

Q85. Answer: (d) EGLTDR

The logic followed here is:

• • Similarly,
• Hence, ‘EGLTDR’ is the correct answer.

Q86. Answer: (b) 9:35:30 am

Shortcut Trick

Usual time = 9:46 am − 7:40 am = 126 minutes.

New time = [Usual Time × (1/4) × (7/6)] + [Usual Time × (3/4) × (5/6)]

New time = [126 × 7/24] + [126 × 15/24] = 126 × (22/24) = 115.5 minutes.

115.5 minutes = 1 hour 55 minutes 30 seconds.

Arrival time = 7:40 am + 1 hr 55 min 30 sec = 9:35:30 am.

Therefore The correct answer is 9:35:30 am.

Alternate Method

Given: Departure = 7:40 am, Usual Arrival = 9:46 am.

Formula Used: Time = Distance ÷ Speed

=> Usual Time (T) = 9:46 − 7:40 = 2 hours 6 minutes = 126 minutes.

=> Let usual distance be D and usual speed be S. T = D/S = 126.

=> New Time (T_n) = [(1/4)D ÷ (6/7)S] + [(3/4)D ÷ (6/5)S]

=> T_n = [(1/4) × (7/6) × (D/S)] + [(3/4) × (5/6) × (D/S)]

=> T_n = (D/S) × [(7/24) + (15/24)] = 126 × (22/24)

=> T_n = 126 × (11/12) = 10.5 × 11 = 115.5 minutes.

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=> 115.5 minutes = 1 hour 55 minutes 30 seconds.

=> New Arrival = 7:40:00 + 1:55:30 = 9:35:30 am.

Therefore The correct answer is 9:35:30 am.

Additional Information

Inverse Proportion of Speed and Time

When distance is constant, Speed is inversely proportional to Time (S prop. to 1/T). If speed becomes x/y of usual, time becomes y/x of usual.

Average Speed for Different Portions

Total Time = ∑(Distance_i ÷ Speed_i). Always convert total time into minutes or seconds for easier calculation in clock-based problems.

Q87. Answer: (b) SINGER

If in a certain code language,

• DANCER is called TEACHER

• TEACHER is called PILOT

• PILOT is called LAWYER

• LAWYER is called SINGER

• SINGER is called CHEF

Lawyer practices law and LAWYER is called SINGER, so Singer is the one who practices law.

Hence, 'SINGER' is the correct answer.

Q88. Answer: (a) 45390

Concept used:

If the sum of digits of the number is divisible by 9, then the number itself is divisible by 9.

Calculation:

We'll be considering the options one by one,

Option 1,

The sum of the digits of 45390

=> 4 + 5 + 3 + 9 + 0

=> 21

=> Not a multiple of 9

Now since we've already encountered a number that is not divisible by 9 among the four options, there is no need to check any further.

Therefore 45390 is not divisible by 9.

Q89. Answer: (c) Vidya - yellow

There are six girls Mayuri, Kavyanjali, Divya, Poonam, Neha and Vidya.

Each girl likes a different colour - red, blue, purple, yellow, green and pink.

1. Divya likes red colour.
2. Poonam does not like green and yellow colour.
3. Neha likes purple colour.
4. Vidya does not like pink and green colour.
5. Mayuri likes blue colour.

Girls	Colour
Divya	Red
Poonam	Green/Yellow
Neha	Purple
Vidya	Pink/Green
Mayuri	Blue
Kavyanjali	

It is clear that Kavyanjali likes Green colour as there is no vacant position left for Green.

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Vidya likes Yellow and Poonam likes Pink Colour as these are the only vacant positions left for Yellow and Pink.

Girls	Colour
Divya	Red
Poonam	Pink
Neha	Purple
Vidya	Yellow
Mayuri	Blue
Kavyanjali	Green

1. Kavyanjali - Pink → Incorrect
2. Neha - blue → Incorrect
3. Vidya - yellow → Correct
4. Poonam - green → Incorrect

Clearly, 'Vidya - yellow' combination is correct.

Hence, ‘Vidya - yellow’ is the correct answer.

Q90. Answer: (c) Jawara

The correct answer is Jawara.

Key Points

• Harvest dance is another name for the Jawara dance, which is mostly performed in Madhya Pradesh's Bundelkhand region.
• This dance is performed by both sexes to commemorate their joy and prosperity following the harvest of their Jowar crop.
• While dancing, women balance the Jawara-filled baskets on their heads.
• The female dancers illustrate the importance of agriculture in our lives by carrying a large basket of Jawara crops on their heads.
• Both before and after the dancing performance, this action is performed.
• Dancers balance a basket on their heads while swaying while maintaining rigidity in their bodies.
• A lot of stunts and prop balancing are necessary for Jawara dancing.

Important Points

• Popular in the adjacent nations of Nepal, Darjeeling, Assam, Bhutan, and Myanmar is the Maruni dance.
• Himachal Pradesh's Charba is a well-known folk dance that is performed during the Dussehra holiday.
• A popular ritualistic folk dance from Goa, India, is called Dhalo.
• Women conduct the dance as a type of protection prayer for their households.

Q91. Answer: (c) 1

Six friends - Aman, Bikram, Chetan, Dhanush, Elisa and Frank, each having a different height.

1. Only three friends are shorter than Chetan.

__ > > Chetan > > > ___

2. Aman is shorter than only Dhanush.

Dhanush > Aman > Chetan > __ > > ___

3. Frank is shorter than Elisa.

4. Frank is not the shortest.

Dhanush > Aman > Chetan > Elisa > Frank > _____

Bikram is the only person left, so Bikram will occupy the vacant position.

Dhanush > Aman > Chetan > Elisa > Frank > Bikram

Clearly, only one friend is shorter than Frank.

Hence, ‘1’ is the correct answer.

Q92. Answer: (c) Gujarat

The correct answer is Gujarat.

Key Points

• On May 1, 1960, Bombay State was abolished and divided into the states of Gujarat, which has a majority Gujarati-speaking population, and Maharashtra, which has a majority Marathi-speaking population.

• At the time of India's independence, a sizable Indian state called Bombay State was established, and other districts were later added to it.

• Bombay Presidency was combined with the princely states of Baroda, Western India, Gujarat (the modern Indian state of Gujarat), and the Deccan States.

• Bombay Presidency roughly corresponds to the modern Indian state of Maharashtra, except for South Maharashtra and Vidarbha (which included parts of the present-day Indian states of Maharashtra and Karnataka).

• The Saurashtra and Kutch States, which ceased to exist, were absorbed into Bombay State on November 1 as part of the States Reorganisation Act's linguistic reorganisation of states.

Important Points

• The Kannada-speaking areas of Belgaum (apart from Chandgad Taluka), Bijapur, Dharwar, and North Canara were moved from Bombay State to Mysore State as a result of the States Reorganisation Act on November 1st, 1956.

• The Marathi-speaking Marathwada portion of Hyderabad State, the Marathi-speaking Vidarbha region of southern Madhya Pradesh, and the Gujarati-speaking Saurashtra and Kutch states were all added to the State of Bombay, which was also greatly expanded.

Q93. Answer: (d) 71.5 π

Given:

A conical tent with a base diameter of 10 m and a height of 12 m has been made.

An additional 10% cloth is required as wastage in stitching the tent.

Concept used:

Curved surface area = πrl

where r = radius of the base and l = slant height

Slant height, L = $\sqrt{(R^2 + H^2)}$

where R = radius of the base, H = Height

The area of the cloth needed to make the conical tent is equal to the curved surface area of the conical tent.

Calculation:

Radius of the base = 10/2 = 5m

Slant height of the tent

=> $\sqrt{(12^2 + 5^2)}$

=> 13m

Total curved surface area of the conical tent

=> π × 5 × 13

=> 65π m2

Now, the area of the cloth required

=> 65π + 65π × 10%

=> 65π + 6.5π

=> 71.5π m^2

Therefore The area of the cloth required is 71.5π m2.

Q94. Answer: (b) 2

Given:

29.5% of a number is 0.59.

Concept used:

Calculation:

Let the number be Q.

According to the question,

29.5% of Q= 0.59

=> 0.295 of Q = 0.59

=> 0.295 × Q = 0.59

=> Q = 0.59/0.295

=> Q = 2

Therefore That number is 2.

Q95. Answer: (b) Sheetal

Six friends - Sheela, Roma, Sheetal, Sreeja, Naina and Rahul are sitting on a bench facing north.

1. Sreeja and Rahul are sitting at the 3rd and 4th positions respectively from the left end.

2. Sheela and Naina are sitting at the extreme right and left ends, respectively.

3. Sheela is sitting to the immediate right of Roma.

Clearly, only one position is left and Sheetal is the only person left, so the vacant position will be occupied by Sheetal.

Therefore, the arrangement will be as shown below:

Sheetal is sitting immediately next to Naina.

Hence, 'Sheetal' is the correct answer.

Q96. Answer: (c) Fifth

The correct answer is Fifth.

• When Morar Ji Desai became the First Janta Prime Minister of India on 24 Mar 1977.

• The fifth plan was terminated by the Janta Government in 1977-78 and they launched their own sixth plan for the period 1978-83 and called it the" rolling plan".

Key Points

Fifth Five-Year Plan:

• The period of the fifth five-year plan was 1974 to 1978.

• The Draft of the fifth plan was prepared and launched by D.P. Dhar in the backdrop of an economic crisis arising out of run-away inflation fuelled by a hike in oil prices and the failure of the Government takeover of the wholesale trade in wheat.

• The targeted growth rate was 4.4% but the actual growth achieved was 4.8%

• The main Objectives of the fifth five-year plan are:

• The removal of poverty

• Economic Independence

Additional Information

• List of the Five Year Plans of India:

Plans	Duration
First Five-Year Plan	1951- 56
Second Five-Year Plan	1956-61
Third Five-Year Plan	1961-66
Plan Holidays	1966-69
Fourth Five-Year Plan	1969-74
Fifth Five-Year Plan	1974-78
Rolling Plan	1978-80
Sixth Five-Year Plan	1980-85
Seventh five Year Plan	1985-90
Annual Plans	1990-91 1991-92
Eight Five Year Plan	1992-97
Ninth Five-Year Plan	1997-02
Tenth Five-Year Plan	2002-07
Eleventh Five-Year Plan	2007-12
Twelfth Five-Year Plan	2012-17

Q97. Answer: (a) 880

Given:

9.993.001 - 5.0012.999 + 4.997

Concept used:

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Calculation:

9.993.001 - 5.0012.999 + 4.997

taking the approximate values,

=> $10^3 - 5^3 + 5$

=> 1000 - 125 + 5

=> 875 + 5

=> 880

Therefore The approximate value is 880.

Q98. Answer: (d) Brazil

The correct answer is Brazil.

• Santos Port also known as the 'coffee port' of the world is located in Brazil.

Key Points

• Brazil is the top coffee-producing country accounting for 40 percent of the global coffee supply.

• Vietnam is the second-largest coffee producer, accounting for roughly 20 percent of the world's coffee production.

• Quality-wise, Ethiopian coffee is considered the world's best coffee.

Important Points

• The motherland of coffee - Ethiopian Highland (Africa).

• Santos Port in Brazil is also known as a Coffee port.

Additional Information

• In India, the first plant of coffee was planted in Baba Budan Hills, Karnataka.

• 3 types of coffee planted in India

1. Coffee Robusta
2. Coffee Arabica
3. Coffee Liberia

• Karnataka is the leading producer of coffee in India.

Q99. Answer: (a) EEPROM

The correct answer is EEPROM.

Key Points

• EEPROM stands for Electrically Erasable Programmable Read-Only Memory.

• It is a non-volatile memory in which the information stored Is retained even after the power goes off.

• A special type of PROM in which the information stored in it can be erased by exposing it to an electrical charge at one byte at a time.

• EEPROM generally offers excellent capabilities and performance.

• EEPROMs are constructed as arrays of floating-gate transistors.

Additional Information

• Read-only memory is a storage medium that permanently stores data on computers and electronic devices.

• The data stored in these chips is nonvolatile i.e. it is not lost when power is removed.

• There are five basic ROM types:

• ROM: Read-Only Memory.

• PROM: Programmable read-only memory.

• EPROM: Erasable programmable read-only memory.

• EEPROM: Electrically erasable programmable read-only memory.

• Flash memory: Flash memory, a type of EEPROM that uses in-circuit wiring.

Q100. Answer: (b) Both Manu and Komali are immediate neighbours of Rajan.

Eight friends - Janaki, Komali, Lokesh, Manu, Nirvan, Rajan, Paru and Silpa, are sitting around a square table in such a way that four of them sit at four corners while four sit in the middle of each of the four sides.

The ones who sit in the middle of the sides face the centre, while those who sit at the four corners face outward (i.e. opposite the centre).

1. Lokesh sits third to the right of Manu.
2. Manu sits in the middle of one of the sides of the table.

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3. Exactly three people sit between Lokesh and Silpa.

4. Paru sits second to the right of Silpa.

5. Nirvan is one of the immediate neighbours of Paru.

6. Exactly three people sit between Nirvan and Komali.

The above condition cannot be satisfied in Case I, so it is eliminated.

7. Janaki sits second to the right of Komali.

Only one person Rajan and one position is vacant, so Rajan will occupy the vacant position.

So, the final arrangement will be as shown below:

1. Nirvan sits second to the left of Rajan → False (Lokesh sits second to the left of Rajan)

2. Both Manu and Komali are immediate neighbours of Rajan → True

3. Only three people sit between Rajan and Janaki → False (Either two or four people sit between Rajan and Janaki when counted from the left of Rajan and right of Rajan respectively)

4. Rajan sits in the middle of one of the sides → False (Rajan sits at one of the corners)

Hence, 'Both Manu and Komali are immediate neighbours of Rajan' is the correct answer.

Q101. Answer: (a) 1986

The correct answer is 1986.

Key Points

• The Churches and Convents of Goa is a serial property located in the former capital of the Portuguese Indies, which is on the west coast of India about 10 km east of the state capital Panjim.

• These seven monuments exerted significant influence in the 16th to 18th centuries on the development of architecture, sculpture, and painting by spreading forms of Manueline, Mannerist, and Baroque art and architecture throughout the countries of Asia where Catholic missions were established.

• The churches and convents of Goa were added to the list of UNESCO World Heritage Sites in 1986.

Additional Information

• United Nations Educational, Scientific and Cultural Organization (UNESCO)

• It is a specialized agency of the United Nations (UN).

• It seeks to build peace through international cooperation in Education, Sciences and Culture.

• It is also a member of the United Nations Sustainable Development Group (UNSDG), a coalition of UN agencies and organizations aimed at fulfilling the Sustainable Development Goals (SDGs).

• UNESCO’s Headquarters are located in Paris and the Organization has more than 50 field offices around the world.

• It has 193 Members and 11 Associate Members and is governed by the General Conference and the Executive Board.

• Three UNESCO member states are not UN members: Cook Islands, Niue, and Palestine.

• While Two UN member states (Israel and Liechtenstein) are not UNESCO members.

• Objectives

• UNESCO focuses on a set of objectives such as:

• Attaining quality education for all and lifelong learning

• Mobilizing science knowledge and policy for sustainable development

• Addressing emerging social and ethical challenges

• Fostering cultural diversity, intercultural dialogue and a culture of peace

• Building inclusive knowledge societies through information and communication

• Focuses on global priority areas - “Africa” and “Gender Equality”.

Q102. Answer: (c) Tejus Chauhan

The correct answer is Tejus Chauhan.

Key Points

• Lawyer Tejus Chauhan was appointed Regional Director for South Asia in the International Court of Arbitration of the Paris-based International Chamber of Commerce (ICC) in September 2021.

• Tejus Chauhan is the second Indian appointed to the position and is based in Singapore.

Additional Information

• International Chamber of Commerce (ICC):

• ICC was founded in the aftermath of the First World War when no world system of rules governed trade, investment, finance or

commercial relations.

• They called themselves “The merchants of peace”

• In 1923 ICC establishes the International Court of Arbitration.

• Headquarters - Paris, France.

• Secretary-General - John W.H. Denton AO

Q103. Answer: (d) Ghrelin

The correct answer is Ghrelin.

Key Points

• Small amounts of ghrelin are also released by the small intestine, pancreas, and brain.

• Ghrelin is primarily synthesised and released by the stomach.

• Ghrelin serves a variety of purposes. Because it stimulates appetite, increases food intake, and encourages fat storage, it is known as the "hunger hormone."

• Ghrelin circulates in the bloodstream and works in the hypothalamus, a region of the brain important in the regulation of appetite, increasing food intake in humans by up to 30%.

Important Points

• The INS gene in humans encodes insulin, a peptide hormone generated by beta cells of the pancreatic islets.

• It is regarded as the body's primary anabolic hormone.

• Resistin is a cysteine-rich peptide hormone produced by adipose tissue and is encoded by the RETN gene in humans.

• Other names for resistin include adipose tissue-specific secretory factor (ADSF) and C/EBP-epsilon-regulated myeloid-specific secreted cysteine-rich protein (XCP1).

• Leptin is a hormone primarily produced by enterocytes and adipocytes in the small intestine.

• It inhibits appetite, which in turn reduces fat storage in adipocytes and aids in the regulation of energy balance.

Q104. Answer: (d) √3

Given:

sin 2x = cos 60° cos 30° + sin 60° sin 30°

Concept used:

Calculation:

sin2x = cos60°cos30° + sin60°sin30°

=> sin2x = (1/2 × √3/2) + (√3/2 × 1/2)

=> sin2x = √3/4 + √3/4

=> sin2x = 2√3/4

=> sin2x = √3/2

=> sin2x = sin60°

=> 2x = 60°

=> x = 30°

Now,

tanx + secx

=> tan30° + sec30°

=> 1/√3 + 2/√3

=> (1 + 2)/√3

=> 3/√3

=> √3

Therefore The value of tanx + secx is √3.

Q105. Answer: (d) South America

The correct answer is South America.

Key Points

• As an ecosystem, Amazon is one of the most biodiverse places on earth. Over 3 million species live in the rainforest, and over 2,500 tree species help to create and sustain this vibrant ecosystem.

• The Amazon is found in South America, spanning Brazil, Bolivia, Peru, Ecuador, Colombia, Venezuela, Guyana, Suriname and French Guiana.

• The major part of the "Amazon forest" is contained in Brazil (60%), Peru (13%), and Colombia (10%).

• The rest of the Amazon forest is found in Ecuador, Bolivia, Venezuela, Guyana, Suriname, and French Guiana.

• The Amazon rainforest is the largest "Tropical Rainforest" and the largest "Biodiverse Field" in the world.

• The Amazon Basin is roughly the size of the forty-eight contiguous United States and covers some 40 per cent of the South American continent.

Q106. Answer: (c) UENLC

The pattern followed here is: Vowels with the highest place value are arranged first and then consonants with the highest place value are arranged

According to the alphabetical positions of the letters,

'COUSIN' is written as 'UOISNC' → Vowels with the highest place value are arranged first and then consonants with the highest place value are arranged to get the code for the word COUSIN.

'AUNTY' is written as 'UAYTN' → Vowels with the highest place value are arranged first and then consonants with the highest place value are arranged to get the code for the word AUNTY.

Similarly,

'UNCLE' will be coded as 'UENLC'.

Hence, ‘UENLC’ is the correct answer.

Q107. Answer: (d) 3

Shortcut Trick

By testing the standard trigonometric angle, let θ = 45°.

LHS: cot2(45°) = 12 = 1

RHS: 1 + cos2(45°) − sin2(45°) = 1 + 1/2 − 1/2 = 1

Since LHS = RHS holds true for θ = 45°, substitute this value into the required expression:

tan2(45°) + cosec2(45°) = 12 + (√2)2 = 1 + 2 = 3

Therefore The correct answer is 3.

Alternate Method

Given:

cot2θ = 1 + cos2θ − sin2θ (where 0° < θ < 90°)

Formula Used:

=> 1 − sin2θ = cos2θ

=> cot2θ = cos2θ ÷ sin2θ

Calculations:

Using the identity 1 − sin2θ = cos2θ in the given equation:

=> cot2θ = (1 − sin2θ) + cos2θ

=> cot2θ = cos2θ + cos2θ

=> cot2θ = 2cos2θ

Expressing cot2θ in terms of sine and cosine:

=> cos2θ ÷ sin2θ = 2cos2θ

Since 0° < θ < 90°, cos2θ ≠ 0. Dividing both sides by cos2θ:

=> 1 ÷ sin2θ = 2

=> sin2θ = 1/2

=> sinθ = 1 ÷ √2

=> θ = 45°

Now, calculate the value of the required expression tan2θ + cosec2θ:

=> tan2(45°) + cosec2(45°)

=> 12 + (√2)2

=> 1 + 2 = 3

Therefore The correct answer is 3.

Additional Information

Trigonometric Identities

Fundamental relations include sin2θ + cos2θ = 1, 1 + tan2θ = sec2θ, and 1 + cot2θ = cosec2θ.

Reciprocal Relations

Key reciprocal formulas: cosecθ = 1 ÷ sinθ, secθ = 1 ÷ cosθ, and cotθ = 1 ÷ tanθ.

Standard Values for 45°

For the standard angle of 45°: sin 45° = cos 45° = 1 ÷ √2, and tan 45° = cot 45° = 1.

Q108. Answer: (c) 26 November

The correct answer is 26 November.

Key Points

• 26 November is celebrated as Constitution Day or Samvidhan Diwas in India annually.

• The day is also known as National Law Day.

• It was on this day in 1949 that the Indian Constitution was adopted by the constituent assembly, and, thereafter, came into force on January 26, 1950, marking the beginning of India as a republic.

• Dr. B. R. Ambedkar is known as the father of the Indian Constitution.

• The Government of India declared 26 November as Constitution Day on 19 November 2015 by a gazette notification.

• 2015 was the 125th birth anniversary year of Dr. B. R. Ambedkar.

Q109. Answer: (d) Satyendranath Tagore

The correct answer is Satyendranath Tagore.

Key Points

• Satyendranath Tagore was born on 1 June 1842 in Calcutta.

• He was the elder brother of Rabindranath Tagore.

• He studied from the Hindu school and was one of the first students to write an examination for the University of Calcutta in 1857.

• He was selected into the civil services in 1863 and returned to India in 1864 after completing his training and probation period in England.

• He had been posted to Bombay Presidency and after a few months had been posted to the city of Ahmedabad.

• He was the president of the famous Bangiya Sahitya Parishad from 1900 to 1901.

• Satyendranath Tagore is the author of the book The Autobiography Of Maharshi Devendranath Tagore.

Additional Information

Surendranath Banerjee	**• He cleared the Indian Civil Service competitive examination in 1869 but was barred owing to a claim he had misrepresented his age.**
Behari Lal Gupta	• He passes the Open Competitive Service Examinations to become the third Indian to join the Indian Civil Service in 1869.
Romesh Dutt	• Romesh Dutt wrote the ICS exam and passed in 1869.

Q110. Answer: (b) Earth's Mantle

The correct answer is Earth's Mantle.

Key Points

• Asthenosphere:

• The asthenosphere is the denser, weaker layer beneath the lithospheric mantle.

• It lies between about 100 kilometers (62 miles) and 410 kilometers (255 miles) beneath Earth's surface.

• The temperature and pressure of the asthenosphere are so high that rocks soften and partly melt, becoming semi-molten.

• The asthenosphere is generally more viscous than the lithosphere, and the lithosphere-asthenosphere boundary (LAB) is the point where geologists and rheologists, scientists who study the flow of matter mark the difference in ductility between the two layers of the upper mantle.

So, it is clear that the Asthenosphere is located beneath the crust and the crustal plates are moving over this layer.

Q111. Answer: (d) Neither assumption I nor assumption II is implicit

Statement: One must wake up early in the morning and exercise.

Assumption I: Exercising is not possible at any other time of the day.

This assumption extends beyond what the statement says. The statement merely emphasizes the importance of waking up early to exercise, but it doesn't rule out the possibility of exercising at other times of the day.

Assumption II: Everyone who exercises early in the morning is fitter than those who do not.

This assumption introduces an unwarranted comparison of fitness levels based on the timing of exercise, which is not mentioned or implied in the statement. The statement does not comment on the fitness outcomes relative to the timing of exercise.

Given that neither of these assumptions is directly supported or implied by the statement, the correct answer is:

Neither assumption I nor assumption II is implicit.

Alternate Method

The statement tells us that it is a must to wake up early and exercise in the morning.

However, this statement does not imply that it is not possible to exercise at other times. Therefore, assumption I is not implicit.

The statement does not give any information at all about the effect of early morning exercises. Therefore, assumption II is not implicit.

Hence, neither assumption I nor assumption II is implicit.

Q112. Answer: (d) @

Sixth from the left end of the arrangement is Y.

(Left) A 8 & $ 4 Y & 6 # @ 9 U Y 3 % L 6 & K 9 & P V 4 B & % # U Y 8 $ # (Right)

Fourth to the right of the sixth from the left end of the arrangement is @.

(Left) A 8 & $ 4 Y & 6 # @ 9 U Y 3 % L 6 & K 9 & P V 4 B & % # U Y 8 $ # (Right)

Hence, '@' is the correct answer.

Q113. Answer: (c) Thursday

Vishakha joined five different hobby classes viz. Painting, Dancing, Modelling, Singing and Cooking.

She attends each class on different days of the same week from Monday to Friday but not necessarily in the same order.

1. She attends Modelling class on Wednesday.
2. She attends neither Painting nor Dancing class on Thursday and Friday.
3. She attends Cooking class on Friday.

Day	Hobby
Monday	
Tuesday	
Wednesday	Modelling
Thursday	Painting / Dancing
Friday	Painting / Dancing Cooking

As, Painting and Dancing classes are not on Thursday, definitely one of the classes is on Monday and other one on Tuesday.

Remaining class is of singing and Thursday is vacant, so it is clear that Singing class is on Thursday.

Day	Hobby
Monday	Painting/Dancing
Tuesday	Painting/Dancing
Wednesday	Modelling
Thursday	Singing
Friday	Cooking

Clearly, on Thursday she attends Singing class.

Hence, 'Thursday' is the correct answer.

Q114. Answer: (b) hs aj

The code for each word is shown below:

• The code for brick is aj and for man - hs

So, the code for brick man will be either 'aj hs' or 'hs aj'.

Hence, 'hs aj' is the correct answer.

Q115. Answer: (c) Punjab-Haryana Plains

The correct answer is Punjab-Haryana plains.

Key Points

• Wheat Production:

• Temperature: Between 10-15°C (Sowing time) and 21-26°C (Ripening & Harvesting) with bright sunlight.

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• Rainfall: Around 75-100 cm.

• Soil Type: Well-drained fertile loamy and clayey loamy (Ganga-Satluj plains and black soil region of the Deccan).

• Top Wheat Producing States: Uttar Pradesh > Madhya Pradesh > Punjab > Haryana.

• India is the second-largest producer after China.

• This is the second most important cereal crop and the main food crop, in north and north-western India.

• The success of the Green Revolution contributed to the growth of Rabi crops, especially wheat.

• Macro Management Mode of Agriculture, National Food Security Mission, and Rashtriya Krishi Vikas Yojana are a few government initiatives to support wheat cultivation.

So as per the given options the question Punjab-Haryana plains is the most appropriate answer.

Q116. Answer: (d) Commissioner of Delhi police

The correct answer is the Commissioner of Delhi police.

Key Points

• Director-General of Border Security Force Rakesh Asthana has been appointed as Commissioner of Delhi Police.

• Mr. S. S. Deswal, Director General of Indo-Tibetan Border Police will hold additional charge of the post of DG, Border Security Force.

• The government had given additional charge of Delhi Police to Balaji Srivastava after the retirement of S. N. Shrivastava on 30 June 2021.

Q117. Answer: (d) 10

Given:

A two-digit positive number is such that the product of its digits is 24.

When 18 is added to the number, the digits interchange their places.

Concept used:

$(A + B)^2 = (A - B)^2 + 4AB$

Calculation:

Let the unit and ten's place digits of the number be P and Q respectively.

The number = 10 × Q + P = 10Q + P

When the digits exchange = 10 × P + Q =10P + Q

According to the question,

PQ = 24 ....(1)

10Q + P + 18 = 10P + Q

=> 9P - 9Q = 18

=> P - Q = 18/9

=> P - Q = 2 ...(2)

=> $(P - Q)^2 = 2^2$

=> (P - Q)2 + 4PQ = 22 + 4PQ

=> (P + Q)2= 22 + 4 × 24 (From 1)

=> (P + Q)2 = 100

=> (P + Q) = 10 ....(3)

Now solving (2) and (3),

P = 6, Q = 4

So, the number = 10 × 4 + 6 = 46

Closest perfect square integer less than 46 = 36

Now, the smallest positive number that should be subtracted from 46 to make it a perfect square

=> 46 - 36

=> 10

Therefore 10 should be subtracted from the given number to make it a perfect square.

Q118. Answer: (c) E-100

The correct answer is E-100.

Key Points

• Prime Minister Narendra Modi launched the E-100 pilot project in Pune to mark World Environment Day on 5 June 2021.

• The ambitious project aims to set up a network for the production and distribution of ethanol across the nation.
• The Prime Minister also released the 'Report of the Expert Committee on Road Map for ethanol blending in India 2020-2025'.

Additional Information

• World Environment Day:
• World environment day is celebrated to encourage awareness and action for the protection of the environment.
• It is celebrated on 5th June every year.
• First held in 1974.
• The theme of first-world environment day was "only one earth".
• The theme for World Environment Day 2022 is Only One Earth.
• The host country is Sweden.

Q119. Answer: (a) 100

The correct answer is 100.

Key Points

• MGNREGA:
• It was launched in 2005 by Govt. of India.
• It is one of the largest work guarantee programs in the world.
• Under this scheme, One-third of the proposed jobs have been reserved for women.
• Panchayati Raj Institution is responsible for planning, implementing, and monitoring MGNREGA works.
• It aims to provide 100 days of wage employment in a financial year to every rural household.

Additional Information

• Mahatma Gandhi Employment Guarantee Act 2005 which later given a new name, the "Mahatma Gandhi National Rural Employment Guarantee Act" or MGNREGA is Indian labor law and social safeguard measure that aims to guarantee the 'right to work'.
• This act was permitted in September 2005 under the UPA government of Prime Minister Dr Manmohan Singh.
• Its objective was to intensify the livelihood security in rural areas by providing at least 100 days of wage employment in a financial year to every household whose adult members volunteer to do unskilled manual work.
• The act was first proposed in 1991 by then Prime Minister P.V. Narasimha Rao.
• It was finally acknowledged in the parliament and commenced implementation in 625 districts of India.
• Based on this pilot involvement, NREGA was scoped up to cover all the districts of India from 1 April 2008.
• The statute was called out by the government as "the largest and most ambitious social security and public works programme in the world".
• In its World Development Report 2014, the World Bank mentioned it as a "stellar example of rural development".

Q120. Answer: (c) 2016

Calculation:

Cases reported in state C = 12%

Cases reported in state F = 30%

Cases reported in state C and F together = 12 + 30 = 42%

Let the entire pie chart be 100%

The crime cases in state A (14% in the pie chart) were 672 in that year.

Now, 1% of the pie chart represents = 672/14 = 48 number of cases

Now, the number of cases reported in state C and state F together

=> 42 × 48

=> 2016

Therefore The number of cases reported in state C and state F together was 2016.

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