RRB NTPC CBT 2 (Level-6) Official paper (Held On: 9 May 2022 Shift 2) (Previous Year Paper)

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FULL TEST

Q1. In a certain code language,

'speak out your mind' is coded as 'sr tw bl ca',

'your results are out' is coded as 'sr pu en tw',

'mind your results' is coded as 'tw ca pu'.

(Note: All codes are two letter codes only)

What is the code for 'are out' in the given code language?

(a) pu sr
(b) sr en
(c) tw pu
(d) en tw

Q2. In a row of 25 people facing north, Keshav is 7^(th) from the extreme right end. If Teja sits 5^(th) to the left of Keshav, what is Teja's position from the extreme left end of the line?

(a) 14^(th)
(b) 16th
(c) 15th
(d) 13th

Q3. In June 2021, Telangana government partnered with which e-commerce firm to develop the 'Medicine from the Sky' project?

(a) Just Dial Ltd.
(b) Grofers India Pvt. Ltd
(c) Flipkart Internet Pvt. Ltd.
(d) Amazon Development Centre India Pvt. Ltd.

Q4. According to the Census of India 2011, in which of the following states was Scheduled Caste population NOT recorded?

(a) Nagaland
(b) Assam
(c) Sikkim
(d) Tripura

Q5. 'Y 1 Z' means 'Y is the sister of Z'.

'Y 2 Z' means 'Y is the husband of Z'.

'Y 3 Z' means 'Y is the daughter of Z'.

'Y 4 Z' means 'Y is the mother of Z'.

'Y 5 Z' means 'Y is the brother of Z'.

In the following expression, select the option that can replace the question mark(?) to establish that 'C is the child of

L'.

U 4 L 2 G 4 M 1 O ? C

(a) Only '2'
(b) Only '4'
(c) Either '5' or '4'
(d) Either '1' or '5'

Q6. A and B undertake to do a piece of work for Rs. 18,750. A can do it in 20 days and B can do it in 30 days. With the help of C, they finished it in 8 days. How much C should be paid for his work in proportion?

(a) Rs. 7,500
(b) Rs. 5,000
(c) Rs. 6,500
(d) Rs. 6,250

Q7. What is the volume of a hemisphere having radius 3 cm?

(a) 18π cm^3
(b) 9π cm3
(c) 27π cm3
(d) 36π cm3

Q8. In how much time did Avinash Sable win the men's 3000 m steeplechase in the National Federation Cup Senior Athletics Championships at Netaji Subhas National Institute in 2021?

(a) 8 minutes 30.20 seconds
(b) 8 minutes 10.20 seconds
(c) 8 minutes 15.20 seconds
(d) 8 minutes 20.20 seconds

Q9. Who among the following is an Indian tabla virtuoso, composer, percussionist, music producer, and film actor who was awarded the Padma Shri in 1988, and the Padma Bhushan in 2002?

(a) Ustad Zakir Hussain
(b) Ustad Allah Rakha
(c) Pandit Kumar Bose
(d) Pandit Anindo Chatterjee

Q10. There are 42 students in a class. If Kritika is 18^(th) from the top, what is her position from the bottom?

(a) 25^(th)
(b) 24th
(c) 26th
(d) 23th

Q11. Read the given statement and conclusions carefully. Decide which of the given conclusions logically follow(s) from the statement.

Statement:

R is not the mother of P. P is the daughter of S, and S has three daughters.

Conclusions:

I. P is the sister of R

II. S is the mother of P.

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

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Q12. PQRS is a cyclic quadrilateral in a circle with centre O. angle PQR and angle PSR are in the ratio 11 : 7. If PQ = QR, then find. angle OPQ

(a) 55°
(b) 62°
(c) 52°
(d) 56°

Q13. 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 being to that group.

(a) 125 - 6
(b) 729 - 10
(c) 512 - 9
(d) 343 - 5

Q14. One-eighth of a number is 12 less than half of 42. Find one-fourth of the number.

(a) 72
(b) 20
(c) 25
(d) 18

Q15. The Gandhi-Irwin pact was signed in _____.

(a) 1926
(b) 1928
(c) 1949
(d) 1931

Q16. A, B, C, D, J, K, L and M are sitting around a square table facing the centre of the table. Four of them are sitting at either of the corners while the other four are sitting at the exact centre of either of the sides.

D sits at one of the corners of the table. Only two people sit between D and C, when counted from the left of D. Only three people sit between C and B. M sits third to the left of B. K sits to the immediate right of M. A is neither an immediate neighbour of B nor C. J sits to the immediate left of A.

Who sits second to the right of L?

(a) C
(b) K
(c) J
(d) M

Q17. Kiran got married 20 years ago. Today Kiran's age is 11/7 times of his age at the time of his marriage. What will Kiran's age be ten years from now?

(a) 55 years
(b) 65 years
(c) 70 years
(d) 45 years

Q18. Which of the following neighbouring countries of India has the smallest area?

(a) Myanmar
(b) Bhutan
(c) Nepal
(d) Pakistan

Q19. In a certain code language, 'COULD' is written as 'BNTKC', and 'MARGIN' is written as 'LZQFHM'. How will 'MOULDING' be written in that language?

(a) CHMFINTK
(b) NITKHCMF

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(c) LNTKCHMF
(d) LNKTCMFH

Q20. Select the number from among the given options that can replace the question mark (?) in the following series.

132, 129, 124, 117, 108, ?

(a) 119
(b) 103
(c) 98
(d) 97

Q21. A sum of Rs. 7800 amounts to Rs. 10381.80 at x% p.a. in 2 years when the interest is compounded 8-monthly. What will be the compound interest on the same sum at (x + 5)% p.a. in one year, if the interest is compounded half yearly?

(a) Rs. 1654
(b) Rs. 1638
(c) Rs. 1660
(d) Rs. 1560

Q22. Select the option that is related to the fifth letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster and the fourth letter-cluster is related to the third letter-cluster.

JOE : GLB :: RDY : OAV :: PGL : ?

(a) SJO
(b) MDO
(c) MDI
(d) SJI

Q23. From a rectangular metallic sheet of length 36 cm and breadth 16 cm, three circular plates of radii 6 cm, 4 cm and 2 cm are cut out. If the area of the remaining part of the metallic sheet is equal to the area of a square, then find the length of each side of the square (in cm).

(Use π = 22/7)

(a) 18.6
(b) 18
(c) 19.4
(d) 20

Q24. Goa became India's 25^(th) state on _____.

(a) 30 May 1990
(b) 30 May 1986
(c) 30 May 1987
(d) 30 May 1988

Q25. Which of the following rivers originates in our neighbouring country Nepal?

(a) Indus
(b) Ganga
(c) Brahmaputra
(d) Rapti

Q26. The amount payable on maturity after 51/2 years on a sum of Rs. 4,750, when invested at a certain rate per cent of simple interest per annum, was Rs. 6,840. What was the per annum per cent rate of simple interest paid?

(a) 9%
(b) 8.5%
(c) 8%
(d) 7.5%

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Q27. _____ is the founder of National Orchestra of India.

(a) Uday Shankar
(b) Ananda Shankar
(c) Anoushka Shankar
(d) Ravi Shankar

Q28. Which of following plants do NOT fix atmospheric nitrogen due to a mutualistic symbiotic relationship with rhizobia bacteria found in their root nodules?

(a) Ficus
(b) Lentils
(c) Chickpeas
(d) Peanuts

Q29. A dealer sells an article at Rs. 403.20, after offering a discount of 16% on its marked price. Had he not offered any discount, he would have earned a profit of 28% on the cost price of the article. What is the cost price (in Rs.) of the article?

(a) 350
(b) 480
(c) 375
(d) 400

Q30. Government of India has planned to earmark how much amount for National Research Foundation (NRF) over a period of 5 years on 26 July 2021?

(a) Rs. 20,000 crore
(b) Rs. 50,000 crore
(c) Rs. 30,000 crore
(d) Rs. 75,000 crore

Q31. The Hemis Gompa festival is celebrated to celebrate the birth anniversary of Guru _____.

(a) Katyayana
(b) Patrul Rinpoche
(c) Marpa Lotsawa
(d) Padmasambhava

Q32. There are four people sitting in a room. When asked a question, each of them gives two answers. Only two out of the four people give one right answer and one wrong answer, while other two persons give both answers wrong. When asked about the day today, person 1 says its Wednesday or Sunday. Person 2 says its Monday or Saturday. Person 3 says its Tuesday or Friday. And person 4 says its Thursday or Wednesday. What is the day today?

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

Q33. Six persons A, B, C, D, E and F were engaged in a group discussion. A spoke immediately before D but immediately after B. B spoke immediately after F. If C spoke immediately after D but before E, then who among the following started the discussion?

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

Q34. Which of the following rivers is also known as Yarlung Tsangpo in the Tibet region of China?

(a) Indus
(b) Sutlej
(c) Brahmaputra
(d) Teesta

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Q35. The mean of a certain number of observations is 12. If one observation is removed and the mean remains unaltered, then the removed observation is:

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

Q36. The FRBMA was enacted in 2003, which set targets for the government to reduce fiscal deficits. What does FRBMA stand for?

(a) Fiscal Relations and Budget Maintenance Act
(b) Financial Relations and Budget Management Act
(c) Financial Responsibility and Budget Maintenance Act
(d) Fiscal Responsibility and Budget Management Act

Q37. If the main diagonal of a cube is 12 cm long, then find the volume of the cube.

(a) $64\sqrt{3}$ cm³
(b) $128\sqrt{3}$ cm³
(c) $192\sqrt{3}$ cm³
(d) 192 cm³

Q38. Kalhana's Rajatarangini in Sanskrit language covers the history of kings who ruled over _____.

(a) Bengal
(b) Bihar
(c) Kashmir
(d) Delhi

Q39. The profit of a firm is the _____ total revenue earned and total cost incurred.

(a) product of
(b) difference between
(c) addition of
(d) division of

Q40. Select the letter-cluster from among the given options that can replace the question mark (?) in the following series.

UZM, QVQ, MRU, ?, EJC

(a) GZX
(b) INY
(c) MQC
(d) RWU

Q41. Eight people M, N, P, S, T, V, X and Y are sitting in a straight row and all are facing north. M sits third from one of the extreme ends of the line. N sits second to the right of M. As many people sit to the right of N as to the left of P. S sits third to the right of P. X sits to the immediate right of Y. Only one person sits between X and V.

How many people sit to the right of T?

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

Q42. The orbit of which of the following satellites is NOT sun-synchronous?

(a) ERS - 1
(b) Meteosat - 11
(c) NIMBUS - 7
(d) IKONOS

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Q43. On the shores of the Bay of Bengal, the temple at Konark was built in the _____.

(a) 10^(th)century
(b) 12^(th)century
(c) 13^(th) century
(d) 11^(th) century

Q44. As of January 2022, who among the following is the Chief Justice of India?

(a) Indira Banerjee
(b) Nuthalapati Venkata Ramana
(c) Uday Umesh Lalit
(d) Sanjay Kishan Kaul

Q45. _____ ranked first in the Human Development Index Report 2020 prepared by the United Nations Development Programme (UNDP).

(a) Iceland
(b) Sweden
(c) Norway
(d) Hong Kong

Q46. A certain sum is invested on compound interest at 18% per annum for 1 year 4 months, the interest being compounded 8-monthly. If the compound interest is Rs. 3,816, then find the sum (in Rs.).

(a) 15,000
(b) 14,800
(c) 14,580
(d) 15,500

Q47. A person can row at a speed of 11 km/h in still water. The speed of the stream is 5/6 m/s. How much time will he take to row a distance of 36 km upstream?

(a) 4 hrs 15 min
(b) 4 hrs 30 min
(c) 4 hrs 20 min
(d) 4 hrs 36 min

Q48. Benkat's birthday on 01^(st) January 2012 was a Sunday. On what day will his next birthday be?

(a) Monday
(b) Tuesday
(c) Saturday
(d) Sunday

Q49. Five products, A, B, C, D and E are priced differently in a general store. 'A' is cheaper than 'C' but costlier than 'B'. 'E' is costlier than 'C' but cheaper than 'D'. Which product is the cheapest?

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

Q50. A question is given, followed by two statements labelled I and II. Identify which of the statements is/are sufficient/necessary to answer the question.

Question:

On which day does Sujatha's birthday fall?

Statements:

I. Tom correctly remembers that her birthday comes after Tuesday but before Saturday.

II. Anu correctly remembers that her birthday comes before Thursday but after Monday.

(a) Statement I alone is sufficient to answer the question
(b) Neither statement I nor II is sufficient to answer the question

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(c) Statement II alone is sufficient to answer the question
(d) Both statements I and II together are sufficient to answer the question

Q51. Atal Tunnel, the world's longest highway tunnel connects Manali with _____.
(a) Kullu
(b) Shimla
(c) Jammu
(d) Lahaul-Spiti

Q52. Simplify the expression. √0.25 + 2√0.0049 - 0.3√0.09
(a) 0.1
(b) 2.73
(c) 5.05
(d) 0.55

Q53. With respect to memory, what is the full form of USB?
(a) Universal Service Bus
(b) Unique Serial Bus
(c) Universal Serial Bus
(d) Unique Service Bus

Q54. Rekha was standing facing east. She then turned 90 degrees right and then turned 45 degrees in the anti-clockwise direction. She then turned 90 degrees clockwise. In which direction is she facing now?
(a) North-east
(b) South
(c) North
(d) South-west

Q55. Which of the following statements is justifiable for 'floating exchange rate'?
(a) It maintains an equilibrium between export and import.
(b) It is determined by the market forces of demand and supply.
(c) It reduces the foreign exchange.
(d) It records international transactions of assets.

Q56. 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 orchids are flowers.

Some orchids are beautiful.

Conclusions:

I. Some flowers are beautiful.

II. All beautiful are flowers.

(a) Only conclusion I follows
(b) Either conclusion I or II follows
(c) Both conclusions I and II follow
(d) Only conclusion II follows

Q57. Six classmates T, U, V, W, X and Y each scored different marks in an entrance examination. V scored more than only T and X. W scored less than only U. X did not score the least. The one who scored the third highest marks, scored 91 marks. X scored 72 marks.

Which of the following could possibly be V's score?

(a) 104
(b) 80
(c) 97

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(d) 71

Q58. The simple interest on a certain sum for 31/3 years at 15% p.a. is Rs. 1,840 less than the simple interest on the same sum for 51/2 years at 12% p.a. The sum is:

(a) Rs. 12,500
(b) Rs. 11,500
(c) Rs. 13,500
(d) Rs. 10,105

Q59. Hepatitis A is an inflammation of the _____ that can cause mild to severe illness.

(a) liver
(b) brain
(c) heart
(d) kidney

Q60. Who was Gianluigi Donnarumma whose name was seen in news in July 2021?

(a) Theatre Director
(b) Sportsperson
(c) Aeronautical Scientist
(d) Politician

Q61. Rupali goes to office from her house via a specific route. Initially, she travels 17 km towards the north, then turns right towards the east and travels 15 km. From here, she again takes a right turn and travels 17 km. Now, she turns left and travels 7 km and finally reaches her office. In which direction and how many km away (considering the shortest distance) is she from her house? (All turns are 90° turns only)

(a) West; 22 km
(b) West; 29 km
(c) East; 24 km
(d) East; 22 km

Q62. Which of the following is an element of d block in the modern periodic table?

(a) Ca
(b) Fe
(c) Mg
(d) Na

Q63. From the top of the tower of 30 m height, a man is observing a kid playing on the ground at an angle of depression of 30 degrees. Find the distance between the foot of the tower and the kid.

(Height of man and kid are to be ignored for calculation)

(a) 53 m
(b) 30/(√3) m
(c) 52√3 m
(d) 30√3 m

Q64. If the square of a positive number is 6 more than five times the number, what is the number?

(a) 6
(b) 8
(c) 5
(d) 9

Q65. The development of Sanskrit grammar began with Panini, with his book named _____.

(a) Ashtadhyayi
(b) Lalitavistara
(c) Mahavastu
(d) Buddhacharita

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Q66. The inspiration for the adoption of the Parliamentary form of government was drawn by the framers of the Constitution of India from _____.

(a) Britain
(b) Japan
(c) Switzerland
(d) United States of America

Q67. Avra travels from A to B at 74 km/h and returns from B to A through the same route at 111 km/h. What was his average speed during the two-way journey?

(a) 92.5 km/h
(b) 88.8 km/h
(c) 87.5 km/h
(d) 90 km/h

Q68. Who among the following is the author of the novel 'Red Earth and Pouring Rain'?

(a) Suketu Mehta
(b) Vikram Chandra
(c) Arundhati Roy
(d) Samanta Bhadra

Q69. Study the given information carefully and answer the question that follows.

The administration has set the following criteria for the selection of a teacher in school. The candidate must:

A. Be a graduate with at least 50% marks

B. Have a qualified bachelor's degree in education

C. Not be less than 21 Years and not more than 32 years as on 1^(st) July 2021.

D. For a candidate with Master in Education, the school board may relax the upper age limit.

Rahul Verma is teaching in a reputed school He is 1^(st) class graduate. He was 23 years old when he joined the previous school as a teacher. He has also completed B.Ed.

(a) The case is to be referred to the school board.
(b) The data given are not sufficient to take a decision.
(c) The candidate is not to be appointed.
(d) The candidate is to be appointed.

Q70. The radius of a sphere and the base radius of cone both are equal to 3√2 cm. If the surface area of the sphere is the same as the total surface area of the right circular cone, then what is the height of the cone?

(a) 8 cm
(b) 9√2 cm
(c) 12 cm
(d) 8√2 cm

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

Statements:

All dresses are shirts.

All shirts are clothes.

Conclusions:

(I) Some clothes are dresses.

(II) All shirts are dresses.

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

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Q72. Find the greatest value of (a + b) such than an 8-digit number 4523a60b is divisible by 15.

(a) 13
(b) 15
(c) 11
(d) 9

Q73. With which of the following states/union territories is the Siddi Dhamal Dance associated?

(a) Andaman and Nicobar Islands
(b) Gujarat
(c) Ladakh
(d) Nagaland

Q74. The diagram representing the breakdown of population by gender and age at a given point of time is known as the _____.

(a) population pyramid
(b) population hyperbola
(c) population cuboid
(d) population sphere

Q75. Ten people are sitting in two parallel rows 1 and 2. J, K, L, M and N are sitting in row 1 facing south, and Q, R, S, T and U are sitting in row 2 facing north, in such a way that each member in row 1 faces a member of row 2.

Only two people sit to the left of Q. J faces an immediate neighbour of Q. M sits to the immediate left of J. The one who faces K sits to the immediate left of S. Neither K nor S sit at any of the extreme ends. Only two people sit between S and T. N faces an immediate neighbour of U.

Who faces R?

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

Q76. The renowned singer MS Subbulakshmi was an Indian Carnatic singer born in _____.

(a) Vellore
(b) Erode
(c) Thanjavur
(d) Madurai

Q77. Scandinavia is a cultural region found in which of the following continents?

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

Q78. Pipe A can fill 50% of a tank in 4 hours and pipe B can completely fill the same tank in 12 hours. If both the pipes are opened at the same time, then in how much time will the empty tank be completely filled?

(a) 4 hours 52 minutes
(b) 4 hours 48 minutes
(c) 4 hours 40 minutes
(d) 4 hours 55 minutes

Q79. If $x = (2 + \sqrt{3})/(2 - \sqrt{3})$, then the value of $(x - 7)^2$ is

(a) 48
(b) $2\sqrt{3}$
(c) $4\sqrt{3}$
(d) 24

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Q80. Palm Jumeirah, the artificial islands built to give boost to the tourism, is a project of which country?

(a) UAE
(b) USA
(c) Singapore
(d) India

Q81. Find the value of the expression 81^(0.16) × 3^(0.36)

(a) 0.13
(b) 1
(c) 2.56
(d) 3

Q82. Simplify the expression.

95 ÷ 15 - 34 ÷ {18 - 4 ÷ (3 × 12) × 9} × 2

(a) • 95/986
(b) 2 5/9
(c) 5 1/3
(d) 2 1/3

Q83. A purchased an item for Rs. 12,300. He spent Rs. 200 as cartage. He sold it to B at 10% profit, who sold it to C at 6% profit. C marked it at Rs. 2,915 higher than his cost price and allowed 10% discount to a customer. Find the profit earned by C (in Rs.).

(a) 1,166
(b) 1,170
(c) 1,172
(d) 1,160

Q84. Roshni correctly remembers that Sreshta's birthday is before Thursday but after Monday. Kalyan correctly remembers that Sreshta's birthday is after Tuesday but before Friday. On which of the following days does Sreshta's birthday fall?

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

Q85. Which of the given fractions is less than 1/2 ?

(a) 15/31
(b) 5/9
(c) 8/15
(d) 11/21

Q86. Tata Airlines was originally launched in the year _____.

(a) 1944
(b) 1932
(c) 1956
(d) 1968

Q87. There is a group of six people S, V, O, Y, X and T, each having a different height. Each one of them is in a different class. O is taller than V but shorter than T. S, V and O are in class 9, 7 and 3, respectively. S is the tallest and in the highest class. X is taller than Y but shorter than V. T is in a class senior to Y but junior to V. X is in a class senior to V.

Who is in a class senior but shorter than V?

(a) X
(b) S
(c) Y

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(d) O

Q88. Which of the following is an earth-observation satellite to be launched jointly by NASA and ISRO?

(a) RISAT
(b) KALPANA
(c) OCEANSAT
(d) NISAR

Q89. The Ministry of Culture organised a flagship festival to achieve the goal of 'Ek Bharat Shreshtha Bharat' in West Bengal in February 2021. What was the name of that festival?

(a) Sankalp Mahotsav
(b) Rashtriya Shakti Mahotsav
(c) Amrit Mahotsav
(d) Rashtriya Sanskriti Mahotsav

Q90. Fiat money is the one which _____.

(a) has taxes equal to government spending
(b) has no intrinsic value
(c) has intrinsic value equal to the face value
(d) does not go any further transformation

Q91. In a certain code language,

'always bring your medicines' is coded as 'ye si ut oh',

'bring every friend' is coded as 'mg td ye',

'always your best friend' is coded as 'ut jo si mg'.

(Note: All codes are two letter codes only)

If 'your every move' is coded as 'px td ut', what is the probable code for 'always best medicines' in the given code language?

(a) jo si ye
(b) oh si jo
(c) td mg ut
(d) oh ye td

Q92. The first English factory in Bengal was set up on the banks of the river Hugli in _____.

(a) 1641 CE
(b) 1651 CE
(c) 1671 CE
(d) 1661 CE

Q93. Which former athlete was honoured with the Lifetime Achievement Award at BBC Indian Sportswoman of the Year 2021?

(a) Anita Sood
(b) Anju Bobby George
(c) Diana Edulji
(d) PT Usha

Q94. In each of the given number-clusters, the number on the right side of = (the equal to sign) is calculated by performing certain mathematical operations on the three numbers on the left of = (the equal to sign). All three number-clusters follow the same pattern. Select the number from among the given options that can replace the question mark(?) in the third number-cluster.

15, 8, 12 = 10

26, 6, 13 = 12

11, 12, 4 = ?

(a) 28

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(b) 33
(c) 11
(d) 19

Q95. How many such pairs of letters are there in the word DOLPHIN (in both the forward and backward directions) which have as many letters between them in the words as there are in the English alphabetical order?
(a) None
(b) Four
(c) Two
(d) Three

Q96. The sum of two numbers is 72. If the numbers are in the ratio 3 : 5, then find the positive difference between the two numbers.
(a) 15
(b) 20
(c) 14
(d) 18

Q97. Name a low-cost ventilator equivalent to commercially available high-end ventilators developed by the Vikram Sarabhai Space Centre (VSCC) of Indian Space Research Organisation in May 2021.
(a) VaRun
(b) GaTi
(c) JeeVan
(d) VaU

Q98. REM is related to IVN as per the English alphabetical order in the same way as DOH is related to WLS. Following the same pattern, KEY is related to _____.
(a) QVB
(b) PUC
(c) QUD
(d) PVB

Q99. The Rigveda is a collection of 1,028 hymns divided into _____ mandalas.
(a) 7
(b) 10
(c) 9
(d) 14

Q100. The length of the base of a triangle is 6 cm more than the corresponding altitude. If the area of the triangle is 108 cm^2, find the length of the base of the triangle.
(a) 12 cm
(b) 9 cm
(c) 18 cm
(d) 27 cm

Q101. Renu's marks were wrongly entered as 99 in place of 9. Due to this error, the average marks of the class were 2.25 more than the actual average. What is the number of students in the class?
(a) 40
(b) 36
(c) 42
(d) 38

Q102. The average of 25 numbers is 48.2. If the average of the first 10 numbers is 47 and the average of the last 12 numbers is 49, then find the average of 58, 69 and the remaining numbers.
(a) 53.7
(b) 54.8

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(c) 52
(d) 55.9

Q103. Find the greatest value of k for which the 6-digit number 24312k is divisible by 6.
(a) 6
(b) 4
(c) 8
(d) 0

Q104. Of the food items listed below, which is the richest source of Vitamin C?
(a) Eggs
(b) Citrus fruits
(c) Pulses
(d) Dates

Q105. Which two signs should be interchanged to make the following equation correct?
12 - 4 + 8 × 3 ÷ 7 = 20
(a) ×, +
(b) +, -
(c) ÷, -
(d) ÷, ×

Q106. In which of the following years did the Monopolies and Restrictive Trade Practices Act (MRTP) became effective?
(a) 1968
(b) 1970
(c) 1974
(d) 1978

Q107. Which of the following is a standard internet protocol used for transmitting the files from one computer to another computer connected to the internet?
(a) SMTP
(b) FTP
(c) TELNET
(d) HTTP

Q108. Study the given digit-letter-symbol sequence carefully and answer the question that follows.
(Left)5 Q + S r 8 B @ A 3 ? 6 c < Z % 6 d & G $ 2(Right)
If the given sequence is written in the reverse order, then which element will be 7^(th) to the right of the 10^(th) element from the right end?
(a) B
(b) 8
(c) %
(d) +

Q109. If the median of a, a/2, 2a/3, a/4, 3a/5 is 6, then what is the value of a where a is natural number?
(a) 11
(b) 10
(c) 9
(d) 12

Q110. Who was the first political personality to discuss the concept of 'Poverty Line'?
(a) Mahatma Gandhi
(b) Rajendra Prasad
(c) Raja Ram Mohan Roy
(d) Dadabhai Naoroji

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Q111. Article 352 of the Constitution of India deals with the:

(a) Supreme court
(b) State emergency
(c) National emergency
(d) Centre-state relations

Q112. In a school there are 360, 520 and 280 students in classes 5, 6 and 7 respectively. Buses are to be hired to take these students for a trip. Find the maximum number of students who can be accommodated in each bus if each bus must take same number of students, and each bus should have students from the same class.

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

Q113. A man on a cliff observes a boat at an angle of depression of 30°, which is approaching the shore to a point exactly beneath the observer, at a uniform speed. Ten minutes later, the angle of depression of the boat is found to be 60°. Find the total time taken by the boat to reach the shore.

(a) 15 minutes
(b) 16 minutes
(c) 18 minutes
(d) 14 minutes

Q114. 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) abacaa
(b) bacaaa
(c) aabaca
(d) aaacba

Q115. Which of the following is the constituents of Article 182 of the Indian Constitution?

(a) Power of the Deputy Speaker or other person to perform the duties of the office of, or to act as, Speaker.
(b) The Speaker or the Deputy Speaker not to preside while a resolution for his removal from office is under consideration.
(c) The Chairman and Deputy Chairman of the Legislative Council.
(d) Vacation and resignation of, and removal from, the offices of Chairman and Deputy Chairman.

Q116. When k > 0, is subtracted from each of 11, 15, 20 and 30, the numbers so obtained in this order are in proportion. What is the mean proportional between (2k + 2) and $3k^2$?

(a) 32
(b) 22
(c) 18
(d) 30

Q117. Which of the following symbols at Sanchi stupas represents the first sermon of Buddha delivered at Sarnath?

(a) Empty Seat
(b) Wheel
(c) Bodhi Tree
(d) Elephant

Q118. Black Soil is dominant in which of the following physical division of India?

(a) Deccan traps
(b) Indo Gangetic plains
(c) Himalayan mountains
(d) Thar desert

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Q119. If 'Pencil' is called 'Pen', 'Pen' is called 'Umbrella', 'Umbrella' is called 'Book', 'Book' is called 'Ruler', and 'Ruler' is called 'Computer', then which of the following can be used as protection against rain?

(a) Book
(b) Computer
(c) Umbrella
(d) Pencil

Q120. The following table presents the number of candidates trained by a training centre over 6 years (2001 to 2006).

Year	Batch 1	Batch 2	Batch 3	Batch 4	Batch 5
2001	75	144	114	102	108
2002	90	126	102	84	126
2003	96	114	75	105	135
2004	105	90	150	90	75
2005	90	75	135	75	90
2006	105	60	165	45	120

The number of candidates trained in Batch 2 in 2001 was what percentage more than the number of candidates trained in Batch 5 in 2005?

(a) 32%
(b) 20%
(c) 60%
(d) 85%

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (b) sr en

The logic followed here is-

Thus,

Code for are → en

Code for out → sr

Hence, 'option 2' is the correct answer.

Q2. Answer: (a) 14^(th)

Given that,

• Total people in row = 25

• Keshav is 7th from the extreme right end.

• Teja sits 5th to the left of Keshav.

• Therefore, Teja's position from the right end = 7 + 5 = 12^(th)

• Now, Teja's position from the left end = Total people - Teja's position from the right end + 1 = 25 - 12 + 1 = 14^(th)

The diagram is given below-

Hence, 'option 1' is the correct answer.

Q3. Answer: (c) Flipkart Internet Pvt. Ltd.

The correct answer is Flipkart Internet Pvt. Ltd.

• In June 2021, the Telangana government partnered with Flipkart Internet Pvt Ltd to develop the 'Medicine from the Sky' project.

• The Telangana government has selected 16 Primary Healthcare Centres (PHCs) for pilot testing of the ambitious ‘Medicine from the sky’, the first-of-its-kind project.

Key Points

• E-commerce firm Flipkart has partnered with the Telangana government to lead a consortium tasked with the development and execution of the drone deliveries of medical supplies to remote areas under the ‘Medicines from the Sky’ project.

• The project was tested out for delivering thousands of Covid-19 vaccines in Hyderabad while keeping in mind all the safety and efficiency parameters.

• Google-backed delivery and e-commerce firm Dunzo Digital earlier announced similar drone delivery flights under the same project in Telangana.

• These technologies will be used to conduct ‘Beyond Visual Line of Sight’ (BVLOS) deliveries in remote areas in Telangana where road infrastructure is not conducive to delivering vaccines faster.

• This project is conceived by World Economic Forum and Healthnet Global Limited which outlines the requirements for drone delivery and assesses proposals.

Important Points

• Other Projects involving the Use of Drones:

• Similar permission was granted to the Indian Council of Medical Research (ICMR) for conducting feasibility study of Covid-19 vaccine delivery using drones, in collaboration with IIT-Kanpur.

• The International Crops Research Institute (ICRISAT) was permitted to deploy drones for agricultural research activities, apart from some agriculture universities and educational institutions.

Additional Information

• Beyond Visual Line of Sight (BVLOS):

• It is a term relating to the operation of Unmanned Aerial Vehicles (UAVs) and drones at distances outside the normal visible range of the pilot.

• BVLOS flights typically require additional equipment and extra training and certification and are subject to permission from aviation authorities.

• Unmanned Aircraft System Rules 2021 states that drones will not be allowed to operate BVLOS, which would limit the use of these gadgets for surveys, photography, security, and various information gathering purposes.

Q4. Answer: (a) Nagaland

The correct answer is Nagaland.

Key Points

State / UT	Proportion of SC Population	Proportion of ST Population
Nagaland	0.0	89.1
Kerala	9.8	1.1
Sikkim	5.0	20.6
Assam	6.9	12.4

• Nagaland is one of the states in India with a population of 1978502.

• There are 11 districts, 114 Taluks, 1428 villages, and 26 towns in Nagaland.

• As per the Census India 2011, Nagaland has 396002 households, a population of 1978502 of which 1024649 are males and

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953853 are females.
• The population of children between ages 0-6 is 291071 which is 14.71% of the total population.
• Out of the total population, 71.14% of the population live in urban areas and 28.86% live in rural areas.
• There is 0 Scheduled Caste (SC) and 86.48% Scheduled Tribe (ST) of the total population in Nagaland.
Important Points
• The total population of India reached 121 crores (1.21 billion)
• The total number of males was 62.31 crores and females were 58.74 crores.
• The percentage of population growth during the decade was 17.7%.
• Sex ratio was 943 females/1000 males
• Child sex ratio was 919 females/1000 males
• State with highest sex ratio – Kerala (1084 females/1000 males)
• UT with highest sex ratio – Puducherry (1029 females/1000 males)
• State with lowest sex ratio – Haryana (877 females/1000 males)
• UT with lowest sex ratio – Daman and Diu (618 females/1000 males)
Additional Information
• There are 7.15% Scheduled Caste (SC) and 12.45% Scheduled Tribe (ST) of the total population in Assam.
• There are 4.63% Scheduled Caste (SC) and 33.8% Scheduled Tribe (ST) of the total population in Sikkim.
• There are 17.83% Scheduled Caste (SC) and 31.76% Scheduled Tribe (ST) of the total population in Tripura.
• There are 0.11% Scheduled Caste (SC) and 94.43% Scheduled Tribe (ST) of the total population in Mizoram.

Q5. Answer: (d) Either '1' or '5'

Given,
• Y 1 Z => Y is the sister of Z
• Y 2 Z => Y is the husband of Z
• Y 3 Z => Y is the daughter of Z
• Y 4 Z => Y is the mother of Z
• Y 5 Z => Y is the brother of Z
Given expression- U 4 L 2 G 4 M 1 O ? C
• U 4 L => U is the mother of L
• L 2 G => L is the husband of G
• G 4 M => G is the mother of M
• M 1 O => M is the sister of O
The given information is depicted in the diagram below-
Thus, O can either be sister or brother of C to establish that C is the child of L.
Hence, 'option 4' is the correct answer.

Q6. Answer: (d) Rs. 6,250

Shortcut Trick
Efficiency ratio of A, B, and (A+B+C) = 1/20 : 1/30 : 1/8
Multiply by LCM(20, 30, 8) = 120 → A : B : (A+B+C) = 6 : 4 : 15
Efficiency of C = 15 − (6 + 4) = 5 units
C's wage share = (Efficiency of C / Total Efficiency) × Total Amount
C's share = (5/15) × 18,750 = 1/3 × 18,750 = Rs. 6,250
Therefore The correct answer is Rs. 6,250.
Alternate Method
Given:
Time taken by A = 20 days
Time taken by B = 30 days
Time taken by A, B, and C together = 8 days
Total wage amount = Rs. 18,750
Formula Used:
Efficiency = Total Work ÷ Time

Wage Share = (Individual Efficiency ÷ Total Efficiency) × Total Wage

Person	Days	Total Work (LCM)	Efficiency
A	20	120	120 ÷ 20 = 6
B	30	120 ÷ 30 = 4	
A + B + C	8	120 ÷ 8 = 15	

Calculations:

=> Efficiency of A = 6 units/day

=> Efficiency of B = 4 units/day

=> Efficiency of A + B + C = 15 units/day

=> Efficiency of C = Efficiency of (A+B+C) − Efficiency of (A+B)

=> Efficiency of C = 15 − (6 + 4) = 5 units/day

=> Ratio of wages (A : B : C) = 6 : 4 : 5

=> Sum of ratio parts = 6 + 4 + 5 = 15

=> C's share = (5 ÷ 15) × 18,750

=> C's share = 1/3 × 18,750 = Rs. 6,250

Therefore The correct answer is Rs. 6,250.

Additional Information

Work and Wages Principle

Wages are distributed in direct proportion to the work done by each individual. If they work for the same amount of time, the wage ratio is equal to their efficiency ratio.

Combined Efficiency

Total efficiency of a group working together is the sum of individual efficiencies: E_(total) = E1 + E2 + ... + E_n.

Time-Efficiency Relation

Efficiency is inversely proportional to the time taken to complete a task (Efficiency prop. to 1/Time) when work is constant.

Q7. Answer: (a) 18π cm³

Given

The radius of a hemisphere is 3cm

Concept used:

A hemisphere's volume is equal to $2\pi r^3/3$

Calculation:

Volume = $(2.\pi.3^3)/3$

=> $2\pi \times 9$

=> 18π

Therefore The volume of a hemisphere having a radius 3 cm is 18π cm3

Q8. Answer: (d) 8 minutes 20.20 seconds

The correct answer is 8 minutes 20.20 seconds.

Key Points

• Athlete Avinash Sable set a new national record in the men's 3000m steeplechase event in the Federation Cup in 2021.

• Avinash recorded a timing of 8:20.20.

• He broke his own record of 8:21.37 set in 2019.

• He is from Mandwa village in the Beed district of Maharashtra.

Important Points

• Avinash is ranked world No. 16 at present.

• He won silver in his debut international event at the 2019 Asian Athletics Championships in Doha.

• In 2019, he became the first Indian to qualify for the 3000 meters steeplechase final at the World Championships.

Additional Information

• 2021 Federation Cup Senior Athletics Championships:

• It was the 24th edition of the national championship in outdoor track and field for India.

• It was held on 15–19 March at the Netaji Subhas National Institute of Sports in Patiala.

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• Three Indian national records were set at the competition:
• Kamalpreet Kaur won the women's discus throw with a record 65.06 m – the first Indian woman to throw beyond 65 meters.
• M. Sreeshankar added six centimeters to his own national record to win the men's long jump.
• In the women's javelin throw, Annu Rani's winning mark of 63.24 m added almost a meter to her previous record.

Q9. Answer: (a) Ustad Zakir Hussain

The correct answer is Ustad Zakir Hussain.

• Ustad Zakir Hussain is an Indian tabla virtuoso, composer, percussionist, music producer, and film actor who was awarded the Padma Shri in 1988, and the Padma Bhushan in 2002.

Key Points

• Zakir Hussain is an Indian tabla player, composer, percussionist, music producer, and film actor.
• He is the eldest son of tabla player Alla Rakha.
• He was awarded the Padma Shri in 1988, and the Padma Bhushan in 2002.
• He was awarded the Sangeet Natak Akademi Award in 1990.
• He was named an Old Dominion Fellow by the Humanities Council at Princeton University.
• He was a visiting professor at Stanford University.

Additional Information

• Ustad Allah Rakha:
• He was an Indian tabla player who specialized in Hindustani classical music.
• He was born in Ghagwal Village Jammu, Jammu, and Kashmir.
• He was awarded the Padma Shri in 1977 and the Sangeet Natak Akademi Award in 1982.
• Pandit Kumar Bose:
• He is an Indian tabla maestro and composer of Indian classical music.
• He was taught by Kishan Maharaj.
• He was awarded the Sangeet Natak Akademi award in 2007.
• Pandit Anindo Chatterjee:
• He is an Indian tabla player.
• He performed at Rashtrapati Bhavan when President of US Barack Obama visited India in November 2010.
• He was awarded the Sangeet Natak Academy Award in 2002.

Q10. Answer: (a) 25^(th)

Given,

• Total number of students = 42
• Position of Kritika from top = 18^(th)

The diagram would be as follows-

Hence, 'option 1' is the correct answer.

Alternate Method

Kritika's position from the bottom = Total students - Kritika's position from the top + 1

= 42 - 18 + 1

= 25^(th)

Q11. Answer: (b) Neither conclusion I nor II follows

Information given can be represented as-

• • No direct relation of R with either P or S is given.

Conclusions:

I. P is the sister of R → Does not follow (it is possible but not definite).

II. S is the mother of P.→ Does not follow (it is possible but not definite). S can either be mother or father of P.

Hence, 'option 2' is the correct answer.

Q12. Answer: (a) 55°

Shortcut Trick

Opposite angles in a cyclic quadrilateral sum to 180°. Let angle PQR = 11x and angle PSR = 7x.

11x + 7x = 180° => 18x = 180° => x = 10°. So, angle PQR = 110° and angle PSR = 70°.

In isosceles ΔPQR (PQ = QR): angle QPR = (180° − 110°) ÷ 2 = 35°.
Central angle angle POR = 2 × angle PSR = 2 × 70° = 140°.
In isosceles ΔOPR (OP = OR): angle OPR = (180° − 140°) ÷ 2 = 20°.
angle OPQ = angle QPR + angle OPR = 35° + 20° = 55°.
Therefore The correct answer is 55°.
Alternate Method
Given: Cyclic quadrilateral PQRS with center O. Ratio angle PQR : angle PSR = 11 : 7. Side PQ = QR.
Formula Used:
1. Sum of opposite angles of a cyclic quadrilateral is 180°.
2. Angle subtended by an arc at the center is double the angle subtended at the circumference.
3. In an isosceles triangle, angles opposite to equal sides are equal.
Calculations:
=> angle PQR + angle PSR = 180° (Opposite angles of cyclic quadrilateral)
=> 11k + 7k = 180° => 18k = 180° => k = 10°
=> angle PQR = 110° and angle PSR = 70°
=> In ΔPQR, PQ = QR => angle QPR = angle QRP
=> angle QPR = (180° − 110°) ÷ 2 = 35°
=> angle POR = 2 × angle PSR = 2 × 70° = 140° (Angle at center property)
=> In ΔOPR, OP = OR (radii) => angle OPR = angle ORP
=> angle OPR = (180° − 140°) ÷ 2 = 20°
=> Since angle PQR > 90°, center O and vertex Q lie on opposite sides of chord PR.
=> angle OPQ = angle QPR + angle OPR = 35° + 20° = 55°
Therefore The correct answer is 55°.
Additional Information
Cyclic Quadrilateral Theorems
The sum of opposite angles is 180°. The exterior angle is equal to the interior opposite angle.
Angle Subtended by a Chord
A chord subtends an angle at the center that is twice the angle it subtends at the major arc of the circumference.
Isosceles Property in Circles
Triangles formed by the center and any two points on the circumference (radii) are always isosceles.

Q13. Answer: (d) 343 - 5

The logic followed here is-
Hence, 'option 4' is the correct answer.

Q14. Answer: (d) 18

Given:
One-eighth of a number is 12 less than half of 42
Calculation:
Let the number be 8a
According to the question,
42 × 1/2 - 8a × 1/8 = 12
=> 21 - a = 12
=> a = 9
So, the number is 9 × 8 = 72
Now, 1/4th of the number = 72 × 1/4 = 18
Therefore Required answer is 18

Q15. Answer: (d) 1931

The correct answer is 1931.
• The Gandhi-Irwin pact was signed in 1931.
Key Points
• The Gandhi-Irwin pact was signed between Mahatma Gandhi and the then Viceroy of India, Lord Irwin on March 5, 1931.

• The features of the Gandhi-Irwin pact:

• Congress would participate in the Second Round Table Conference.

• Congress would discontinue the Civil Disobedience Movement.

• The Government would withdraw all ordinances issued to curb Congress.

• The Government would withdraw all prosecutions relating to offenses other than violent ones.

• The Government would release all persons undergoing sentences of imprisonment for their activities in the civil disobedience movement.

Additional Information

• Civil Disobedience Movement

• The Civil Disobedience Movement was started by Gandhi on 12th March 1930 with his famous Dandi March.

• Together with 78 chosen followers, Gandhi walked nearly 375 km from Sabarmati Ashram to Dandi, a village on the Gujarat sea coast.

• On the morning of 6th April 1930, Gandhiji broke the salt law by making salt. Thousands of people followed suit.

• This movement resulted in Gandhi-Irwin Pact on 5 March 1931.

• Indians were allowed to make salt for domestic use.

• Gandhiji attended the Second Round Table Conference in London as an ‘equal’.

Q16. Answer: (d) M

According to given information,

1. Number of persons = 8

2. Name of persons → A, B, C, D, J, K, L and M

3. D sits at one of the corners of the table. Only two people sit between D and C, when counted from the left of D. Only three people sit between C and B.

4. M sits third to the left of B. K sits to the immediate right of M. A is neither an immediate neighbour of B nor C. J sits to the immediate left of A.

Thus, M sits second to the right of L.

Hence, 'option 4' is the correct answer.

Q17. Answer: (b) 65 years

Shortcut Trick

Ratio of Present Age to Marriage Age = 11 : 7

Difference in ratio = 11 − 7 = 4 units.

Since he got married 20 years ago, 4 units = 20 years → 1 unit = 5 years.

Present Age = 11 units = 11 × 5 = 55 years.

Kiran's age 10 years from now = 55 + 10 = 65 years.

Therefore The correct answer is 65 years.

Alternate Method

Given:

Kiran got married 20 years ago.

Present age = 11/7 × Age at the time of marriage.

Calculations:

=> Let Kiran's age at the time of his marriage be x years.

=> Then, his present age = (x + 20) years.

=> According to the given condition: x + 20 = (11/7) × x

=> 7 × (x + 20) = 11x

=> 7x + 140 = 11x

=> 11x − 7x = 140

=> 4x = 140

=> x = 140 ÷ 4 = 35

=> Present age of Kiran = 35 + 20 = 55 years.

=> Kiran's age 10 years from now = 55 + 10 = 65 years.

Therefore The correct answer is 65 years.

Additional Information

Constant Age Difference

The age difference between any two individuals always remains constant over time. If Person A is 5 years older than Person B today, A will remain 5 years older than B indefinitely after any number of years.

Ratio of Ages

If the present age ratio of A and B is x : y, and n years ago it was p : q, balancing the ratio difference directly provides the exact value of 1 unit in years, solving the problem without complex equations.

Average Age Impact

If the current average age of a group of n people is A, then exactly k years later, the new average age of the same exact group becomes A + k. If a new person joins, the net deviation method determines their age relative to the average.

Q18. Answer: (b) Bhutan

The correct answer is Bhutan.

• Bhutan has the smallest area among neighboring countries of India.

Key Points

• A total of 9 countries share borders with India.

• Out of these, 7 countries share land borders while 2 countries share sea borders with India.

• Afghanistan, Bangladesh, Bhutan, China, Myanmar, Nepal, and Pakistan share land borders with India.

• Sri Lanka and the Maldives are two countries with water borders.

• Bhutan is the smallest neighboring country of India in terms of area and land borders.

Important Points

• The total area of Bhutan is 38,394 km².

• The total area of Myanmar is 676,575 km².

• The total area of Nepal is 147,516 km².

• The total area of Pakistan is 796,095 km².

Q19. Answer: (c) LNTKCHMF

This question is based on the positional value of alphabets.

The logic followed here is-

And

Similarly,

Hence, 'option 3' is the correct answer.

Q20. Answer: (d) 97

The logic followed here is-

Hence, 'option 4' is the correct answer.

Q21. Answer: (b) Rs. 1638

Shortcut Trick

Ratio of Amount to Principal for 3 periods (24/8 = 3): A/P = 10381.80 / 7800 = 1.331.

For n = 3, $1 + r = \sqrt[3]{1.331} = 1.1$ => 8-monthly rate (r) = 10%.

Annual rate x = 10% × (12 / 8) = 15%. New annual rate = 15% + 5% = 20%.

Compounded half-yearly for 1 year (2 periods): Rate = 10% per period.

Effective interest rate = 10 + 10 + (10 × 10 / 100) = 21%.

Compound Interest = 21% of 7800 = 78 × 21 = Rs. 1638.

Therefore The correct answer is Rs. 1638.

Alternate Method

Given: Principal (P) = Rs. 7800, Amount (A) = Rs. 10381.80, Time = 2 years, Compounding = 8-monthly.

Formula Used: $A = P(1 + r/100)^n$; $CI = P[(1 + r/100)^n - 1]$

=> Number of periods (n) = (2 × 12) / 8 = 3 periods.

=> $10381.80 = 7800 (1 + r/100)^3$

=> $10381.80 / 7800 = (1 + r/100)^3$

=> $1.331 = (1 + r/100)^3$ => $(1.1)^3 = (1 + r/100)^3$

=> r/100 = 0.1 => r = 10% (Rate for 8 months).

=> Annual rate x = (10 / 8) × 12 = 15% p.a.

=> New rate = x + 5 = 15 + 5 = 20% p.a.

=> For half-yearly compounding: New r = 20 / 2 = 10%; n = 1 × 2 = 2.

=> CI = 7800 [(1 + 10/100)² − 1]

=> CI = 7800 [1.21 − 1] = 7800 × 0.21 = Rs. 1638.

Therefore The correct answer is Rs. 1638.

Additional Information

Effective Rate of Interest

When interest is compounded more than once a year, the effective rate is given by R_(eff) = [(1 + r/n)^n − 1] × 100, where n is the number of compounding periods.

Compounding Frequency Rule

For a period of T years and annual rate R%, if interest is compounded every 'k' months: New Rate = R × (k/12) and New Time = (T × 12)/k.

Successive Percentage Method

For 2 periods at r%, the total compound interest percentage is r + r + (r×r)/100.

Q22. Answer: (c) MDI

This question is based on the concept of positional value of alphabets.

The logic followed here is-

Similarly,

Thus, 'option 3' is the correct answer.

Q23. Answer: (d) 20

Shortcut Trick

Total Sheet Area = 36 × 16 = 576 cm².

Sum of circle areas = (22/7) × (6² + 4² + 2²) = (22/7) × 56 = 176 cm².

Area of square = 576 − 176 = 400 cm².

Side of square = √400 = 20 cm.

Therefore The correct answer is 20 cm.

Alternate Method

Given:

Length (L) = 36 cm, Breadth (B) = 16 cm

Radii of 3 circles: r1 = 6 cm, r2 = 4 cm, r3 = 2 cm

Formula Used:

Area of Rectangle = Length × Breadth

Area of Circle = π × r²

Area of Square = side²

Calculations:

=> Area of Rectangular Sheet = 36 × 16 = 576 cm²

=> Total Area of 3 Circular Plates = π × (r1² + r2² + r3²)

=> Area = (22/7) × (6² + 4² + 2²)

=> Area = (22/7) × (36 + 16 + 4) = (22/7) × 56

=> Area = 22 × 8 = 176 cm²

=> Remaining Area = Sheet Area − Total Circle Area

=> Remaining Area = 576 − 176 = 400 cm²

=> Area of Square = 400 cm²

=> side² = 400

=> side = √400 = 20 cm

Therefore The correct answer is 20 cm.

Additional Information

Area of 2D Shapes

The Area of a rectangle is the product of its length and breadth (L × B). For a circle, the area is πr², where π ≈ 22/7.

Square Side Formula

If the Area of a square is known, the length of each side is the square root of the area (√Area).

Units of Measurement

Always ensure that all dimensions are in the same units (e.g., cm) before performing subtraction or comparison of areas.

Q24. Answer: (c) 30 May 1987

The correct answer is 30 May 1987.

• Goa became India's 25th state on 30 May 1987.

Key Points

• Goa is India's smallest state by area.

• Goa remained under the Portuguese administration even after India gained independence in 1947.

• After a 36-hour battle, the Indian Army invaded and captured Goa in 1961.

• Goa, Daman, and Diu merged to become the union territory of Goa, Daman, and Diu.

• From 19 December 1961 until 30 May 1987, the territory of Goa, Daman, and Diu was a union territory of India.

• Goa was granted statehood in 1987.

• Every year on December 19, Goa commemorates its liberation.

• The Indian government recognized Konkani as Goa's official language in February 1987.

• Pratapsingh Rane was the first Chief Minister of the newly established Goa state and had previously served as Chief Minister of Goa, Daman, and Diu.

Important Points

• Goa is located on the southwestern coast of India within the region known as the Konkan and geographically separated from the Deccan highlands by the Western Ghats.

• Capital: Panji.

• Official Language:

• Konkani which is one of the 22 languages from the Eight Schedule.

• Borders:

• It is surrounded by Maharashtra to the north and Karnataka to the east and south, with the Arabian Sea forming its western coast.

• Geography:

• The highest point of Goa is Sonsogor.

• Goa's seven major rivers are the Zuari, Mandovi, Terekhol, Chapora, Galgibag, Kumbarjua canal, Talpona and the Sal.

• Most of Goa's soil cover is made up of laterites.

Q25. Answer: (d) Rapti

The correct answer is Rapti.

• Rapti river originates in our neighboring country Nepal.

Key Points

• Rapti River denotes one of the two – East Rapti River or West Rapti River.

• East Rapti River:

• It is a small river draining the Chitwan Valley in Nepal.

• Flowing from east to west, it forms the northern border of the Chitwan National Park, also joining the Narayani River inside the protected area.

• It flows through the Mahabharat Range.

• The tributaries: from left - Samari, Karra, Kukhreni, Reu, Panchand, and right – Lothther and Manahari.

• West Rapti River:

• It locates in both the country, Nepal and India.

• Draining the Rapti Zone of Nepal, this river flows from the Mid-Western Region to the Awadh and Purwanchal regions of Uttar Pradesh state of India.

• Finally, it joins the major left-bank tributary of the Ganges, Ghaghara, known as Karnali inside Nepal.

• The tributaries are Lungri Khola, Jhimruk Khola, Ami River, and Rohini river.

Additional Information

• Indus:

• The Indus originates from the Bokhar Chu (glacier) on the northern slopes of Mt. Kailash.

• Jhelum, Chenab, Ravi, Beas, and Satluj are its main tributaries.

• The River passes by the Nanga-Parvat and turns southwest to enter Pakistan.

• Ganga:

• It is a transboundary river of Asia which flows through India and Bangladesh.

• The important tributaries are the Yamuna, the Ramaganga, the Gomti, the Ghagra, the Son, the Gandak, the Burhi Gandak, the Kosi and the Mahananda.

• At Farakka in West Bengal, the river divides into two arms namely the Padma which flows to Bangladesh, and the Hooghly which flows through West Bengal.

• Brahmaputra:

• It is known as the Yarlung Tsangpo in Tibet and the Dihang River in Arunachal Pradesh.

• It originates in the Manasarovar Lake region, near Mount Kailash.

• The principal tributaries of the river are the Lohit, the Dibang, the Subansiri, the Jiabharali, the Dhansiri, the Manas, the Torsa, the Sankosh, and the Teesta.

Q26. Answer: (c) 8%

Given:

Sum = Rs. 4750

Time = 51/2 years

Amount = Rs. 6840

Concept used:

S.I = PTR/100

P = Principal

T = time

R = rate

Amount = P + S.I

Calculation:

Interest = 6840 - 4750

=> 2090

Let the rate be R

According to the question,

2090 = (4750 × 11 × R)/(100 × 2)

=> 2090 × 20 = 475 × 11R

=> R = 41800/(475 × 11)

=> R = 8

Therefore The per annum per cent rate of simple interest paid is 8

Q27. Answer: (d) Ravi Shankar

The correct answer is Ravi Shankar.

• Ravi Shankar is the founder of the National Orchestra of India.

Key Points

• Ravi Shankar (Ravindra Shankar Chowdhury) was an Indian musician, player of the sitar, and composer.

• He founded the National Orchestra of India.

• He was influential in stimulating Western appreciation of Indian music.

• He was honored with Bharat Ratna in 1999.

• He won Sangeet Natak Akademi Award in 1962.

• He won UNESCO International Music Council Award in 1975.

Additional Information

• Uday Shankar:

• He was an Indian dancer and choreographer.

• He was a pioneer of modern dance in India.

• He was awarded Sangeet Natak Akademi Fellowship in 1962.

• He was awarded the Padma Vibhushan in 1971.

• Ananda Shankar:

• He was an Indian musician, singer, and composer.

• He was the nephew of Indian classical musician Ravi Shankar.

• He released his first album, Ananda Shankar, in 1970,
• Anoushka Shankar:
• She is a British-Indian-American sitar player, producer, and film composer.
• She has won 7 Grammy Awards nominations and was the first Indian musician to perform live at the ceremony.
• She is the daughter of Indian classical musician Ravi Shankar.

Q28. Answer: (a) Ficus

The correct answer is Ficus.

• Ficus plants do not fix atmospheric nitrogen.

Key Points

• Nitrogen fixation is the process by which nitrogen is taken from its molecular form (N2) in the atmosphere and converted into nitrogen compounds useful for other biochemical processes.
• Fixation can occur through atmospheric (lightning), industrial, or biological processes.
• A Nitrogen-fixing crop is a natural way to provide plant-adjusted Nitrogen without any industrial harm to nature.
• Nitrogen-fixing cover crops bring multiple benefits to farmers:
• Participate in Nitrogen fixation
• Protect soil from erosion by covering it or holding it in place with strong root systems
• Improve soil fertility when used as green manure
• Retain soil moisture
• Help in weed management with crop residues
• Serve as forage and grazing material for poultry and cattle
• Attract pollinators at the crop flowering time.
• Legumes are known as the best nitrogen-fixing plants and can be grown either as cash or cover crops.
• Some of the legume species are Lentils, Chickpea, Peanuts, Mung beans, pigeon pea, etc.
• The Ficus tree is a species of flowering plant.
• It is the official tree of Bangkok.

Q29. Answer: (c) 375

Given:

A dealer sells an article at Rs. 403.20, after offering a discount of 16% on its marked price.

Concept used:

Selling price = Cost price + Cost price × Profit%

Selling price = Marked price - Markes price × Discount%

Calculation:

Marked price = 403.20 × 100/84

=> 480

Now if he sell the article at Rs. 480 there would be a profit of 28%

So, Cost price = 480 × 100/128

=> Rs. 375

Therefore The cost price of the article is Rs. 375

Q30. Answer: (b) Rs. 50,000 crore

The correct answer is Rs. 50,000 crores.

Key Points

• Rs. 50,000 cr. for National Research Foundation
• Finance Minister Nirmala Sitharaman earmarked Rs. 50,000 crore over five years for the creation of a National Research Foundation (NRF) — an umbrella body that is expected to fund research across a range of disciplines, from science and technology to humanities.
• Sitharaman had first announced such a foundation in her 2019 Budget speech after it was proposed in a draft of India's New Education Policy (NEP).
• NRF will ensure that the overall research ecosystem in the country is strengthened with a focus on identified national priority thrust areas.
• The NRF will also seed and build research capacity at universities and colleges through a formal mechanism of mentoring.
• It will also catalyse research at universities and colleges that have until now not been big players in research.

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• The NRF will also help build the capacity to do research through an institutionalised mentoring mechanism, involving expert researchers from premier institutions of the country, the NEP document notes.
• The NRF would be an autonomous body and represented by all major research and education bodies.

Q31. Answer: (d) Padmasambhava

The correct answer is Padmasambhava.
• The Hemis Gompa festival is celebrated to celebrate the birth anniversary of Guru Padmasambhava.
Key Points
• Hemis festival of Ladakh is celebrated to mark the birth anniversary of Guru Padmasambhava.
• It is a two-day celebration that marks the victory of good over evil.
• The legend has it that Lord Padamsambhav defeated the dark forces with the help of Vajrayana Buddhism.
• The masked dance performance called Cham makes the festival more attractive.
• It is a slow dance and depicts the war between good and evil wherein the good wins.
Additional Information
• Katyayana:
• He was a disciple of Gautama Buddha.
• He is listed as one of the ten principal disciples.
• He is also known as Phra Sangkajai.
• Patrul Rinpoche:
• He was a teacher and author from the Nyingma school of Tibetan Buddhism.
• Some of his teachings are:
• Use the time of your life.
• Develop your inner happiness.
• Recognize the impermanence of all outer pleasure.
• Marpa Lotsawa:
• He was a Tibetan Buddhist teacher credited with the transmission of many Vajrayana teachings from India.
• He is said to have founded Stongdey Monastery in Zanskar in 1052 CE.

Q32. Answer: (d) Wednesday

Given,
• Two persons give one right answer and one wrong answer.
• Two persons give both answers wrong.
=> Thus, the day which is common in the answer of any two persons and also that day should not be answered by remaining two persons (who gave only wrong answers) would be the day today.
Tabulating the given information-
Thus, Wednesday is the common answer given by Person 1 and Person 4.
Also, Wednesday is not given as an answer by Person 2 and Person 3.
Thus, Wednesday is the day today.
Hence, 'option 4' is the correct answer.

Q33. Answer: (a) F

No. of persons = 6
Name of persons: A, B, C, D, E and F
Arranging persons by their speaking order-
1. A spoke immediately before D but immediately after B. B spoke immediately after F.
F ► B ► A ► D
2. C spoke immediately after D but before E.
F ► B ► A ► D ► C ► E
Thus, F started the discussion.
Hence, 'option 1' is the correct answer.

Q34. Answer: (c) Brahmaputra

The correct answer is Brahmaputra.

• Brahmaputra river is also known as the Yarlung Tsangpo in the Tibet region of China.

Key Points

• The Yarlung Tsangpo River is the longest river in the Tibet Region, China.

• Downstream from Arunachal Pradesh, the river becomes wider and after reaching Assam, the river is known as the Brahmaputra.

• The river is called the Everest of Rivers because of its extreme conditions.

• It is also called the Dihang River in Arunachal Pradesh.

• It originates from the Manasarovar Lake region, near Mount Kailash.

• It flows southwest through the Assam Valley as the Brahmaputra and south through Bangladesh as the Jamuna.

• It merges with the Ganges, popularly known as the Padma in Bangladesh, becomes the Meghna, and ultimately empties into the Bay of Bengal.

Additional Information

• Indus:

• The Indus originates from the Bokhar Chu (glacier) on the northern slopes of Mt. Kailash.

• Jhelum, Chenab, Ravi, Beas, and Satluj are its main tributaries.

• The River passes by the Nanga-Parvat and turns southwest to enter Pakistan.

• Sutlej:

• Sutlej originates from Rakshastal Lake.

• Rakshastal Lake is located near Lake Manasarovar and Mount Kailash.

• Sutlej River is also known as Shatadru (Ancient name).

• River Sutlej is one of the major tributaries of Indus.

• Teesta:

• Teesta River originates from the Pahunri (or Teesta Kangse) glacier in Sikkim.

• It is a tributary of the Brahmaputra.

• It flows through Sikkim and West Bengal through Bangladesh and enters the Bay of Bengal.

Q35. Answer: (a) 12

Given:

The mean of a certain number of observations is 12

If one observation is removed and the mean remains unaltered

Concept used:

Mean = Sum of observation/No. of observation

Calculation:

Let total observations be a

So, total = 12 × a = 12a

Now, after removing one observation no. of observation = a - 1

New total = (a - 1) × 12 = 12a - 12

Difference = 12a - (12a - 12)

=> 12 i.e the removed observation.

Therefore Required answer is 12

Q36. Answer: (d) Fiscal Responsibility and Budget Management Act

The correct answer is Fiscal Responsibility and Budget Management Act.

Key Points

• The FRBM Act aims to introduce transparency in India's fiscal management systems.

• The Act's long-term objective is for India to achieve fiscal stability and give the RBI flexibility to deal with inflation in India.

• In 2016, the government set up a committee under N K Singh to review the FRBM Act.

In News

• In 2021-22, the government had not provided a target for the next three years and will amend the FRBM Act to accommodate the higher fiscal deficit.

• The fiscal deficit is targeted at 6.8% of GDP in 2020-21 (4.6% in 2019-20)

• In Union Budget 2021 speech, the Finance Minister has announced the government's aim to steadily reduce the fiscal deficit to 4.5% of GDP by 2025-26.

Additional Information

FRBM Act:

• It was enacted in August 2003.

• It aims to make the Central government responsible for ensuring inter-generational equity in fiscal management and long-term macro-economic stability.

• The Act envisages the setting of limits on the Central government’s debt and deficits.

• It limited the fiscal deficit to 3% of the GDP.

• To ensure that the States to are financially prudent, the 12th Finance Commission’s recommendations in 2004 linked debt relief to States with their enactment of similar laws.

• The States have since enacted their own respective Financial Responsibility Legislation, which sets the same 3% of Gross State Domestic Product (GSDP) cap on their annual budget deficits.

• It also mandates greater transparency in fiscal operations of the Central government and the conduct of fiscal policy in a medium-term framework.

• The Budget of the Union government includes a Medium-Term Fiscal Policy Statement that specifies the annual revenue and fiscal deficit goals over a three-year horizon.

• The rules for implementing the Act were notified in July 2004. The rules were amended in 2018, and most recently to the setting of a target of 3.1% for March 2023.

• The NK Singh committee (set up in 2016) recommended that the government should target a fiscal deficit of 3% of the GDP in the years up to March 31, 2020, cut it to 2.8% in 2020-21, and to 2.5% by 2023.

Q37. Answer: (c) 192√3 cm³

Given:

Diagonal of cube = 12

Formula used:

Volume of cube = $(side)^3$

Diagonal of a cube = side × √3

Calculation:

According to the question,

Diagonal = side × √3

=> 12 = side × √3

=> 4 × 3 = side × √3

=> 4 × $(\sqrt{3})^2$ = side × √3

=> side = 4√3 cm

Now, Volume of cube = $(4\sqrt{3})^3 = 192\sqrt{3}$ cm³

Therefore The volume of a cube is 192√3 cm3.

Q38. Answer: (c) Kashmir

The correct answer is Kashmir.

• Kalhana's Rajatarangini in the Sanskrit language covers the history of kings who ruled over Kashmir.

Key Points

• Rajatarangini is a metrical legendary and historical chronicle of the kings of Kashmir.

• The meaning of the word Rajatarangini is The River of Kings.

• It was written in Sanskrit by Kashmiri historian Kalhana in the 12th century.

• It consists of 7826 verses, which are divided into eight books called Tarangas.

• It covers the entire period of history from the earliest times until the date of its composition in the Kashmir region.

• A Persian translation of Rajatarangini was commissioned by Zain-ul-Abidin.

Q39. Answer: (b) difference between

The correct answer is difference between.

• The profit of a firm is the difference between the total revenue earned and the total cost incurred.

Key Points

• Profit is the surplus left from revenue after paying all costs.

• Profit is found by deducting total costs from revenue.

• Profit = Total revenue - Total costs

• Revenue is the amount of money that a business brings in by selling its goods or services at a certain price.

• The total revenue represents the total amount of money earned by a business, and marginal revenue refers to the increase in revenue achieved by selling one additional unit of a product or service.

• Total cost is all the costs incurred in producing something or engaging in an activity.

Q40. Answer: (b) INY

This question is based on concept of positional value of alphabets.

The logic followed here is-

Hence, 'option 2' is the correct answer.

Q41. Answer: (b) One

According to the information given in question-

1. M sits third from one of the extreme ends of the line. N sits second to the right of M.

2. As many people sit to the right of N as to the left of P. S sits third to the right of P.

3. X sits to the immediate right of Y. Only one person sits between X and V.

Case I is eliminated as these conditions can not be applied in that case. Thus, final arrangement is-

Clearly, one person sits to the right of T.

Hence, 'option 2' is the correct answer.

Q42. Answer: (b) Meteosat - 11

The correct answer is Meteosat - 11.

• The orbit of Meteosat - 11 is not sun-synchronous.

Key Points

• The Meteosat series of satellites are geostationary meteorological satellites operated by EUMETSAT under the Meteosat Transition Programme (MTP) and the Meteosat Second Generation (MSG) program.

• EUMETSAT currently operates the Meteosat -9, -10, and -11 in geostationary orbit (36,000km) over Europe and Africa, and Meteosat-8 over the Indian Ocean.

• Sun-synchronous orbit (SSO) is a particular kind of polar orbit.

• Satellites in SSO, traveling over the polar regions, are synchronous with the Sun.

• This means they are synchronized to always be in the same 'fixed' position relative to the Sun.

Additional Information

• ERS-1:

• It is a sun-synchronous satellite.

• It was launched in 1991.

• ERS stands for European Remote Sensing satellite.

• NIMBUS-7:

• It is the seventh and last satellite in the series of the Nimbus program.

• It is a sun-synchronous satellite.

• It was launched on October 24, 1978, by a Delta rocket from Vandenberg Air Force Base, California, United States.

• IKONOS:

• It was a commercial Earth observation satellite.

• It was the first to collect publicly available high-resolution imagery at 1 and 4-meter resolution.

• It is also sun-synchronous and was launched in 1999.

Q43. Answer: (c) 13^(th) century

The correct answer is 13th century.

• On the shores of the Bay of Bengal, the temple at Konark was built in the 13th century.

Key Points

• Konark Sun Temple, located in the East Odisha near the sacred city of Puri.

• Built in the 13th year by King Narasimha I (AD 1238-1264).

• Its scale, refinement and concept represent the strength and stability of the Ganga Empire as well as the value systems of the historical environment.

• The temple is designed in the shape of a colossal chariot.

• It is dedicated to the god sun.

• In this sense, it is directly and materially linked to Brahmanism and tantric belief systems.

• The Konark temple is widely known not only for its architectural grandeur but also for the intricacy and profusion of sculptural work.

• It marks the highest point of achievement of Kalinga architecture depicting the grace, the joy and the rhythm of life all its wondrous variety.

• It was declared a UNESCO world heritage site in 1984.

• There are two rows of 12 wheels on each side of the Konark sun temple.

• Sailors once called this Sun Temple of Konark, the Black Pagoda because it was supposed to draw ships into the shore and cause shipwrecks.

• Konârak is the invaluable link in the history of the diffusion of the cult of Surya, which originating in Kashmir during the 8th century, finally reached the shores of Eastern India.

Q44. Answer: (b) Nuthalapati Venkata Ramana

The correct answer is Nuthalapati Venkata Ramana.

• Nuthalapati Venkata Ramana is the Chief Justice of India.

Key Points

• Justice Ramana is the 48^(th) Chief Justice of India and was born on August 27, 1957.

• He hails from the Krishna district of Andhra Pradesh.

• .He will have a tenure as the Chief Justice of India till August 26, 2022.

• He took charge on April 24, 2021, a day after Sharad Arvind Bobde retired as chief justice.

• He has practiced in the High Court of Andhra Pradesh, Central and Andhra Pradesh Administrative Tribunals, and the Supreme Court of India in Civil, Criminal, Constitutional, Labour, Service, and Election matters.

• He was elevated as a Judge in the Supreme Court of India on 17 February 2014.

Additional Information

• Indira Banerjee

• She was born on 24th September 1957.

• Elevated as a permanent Judge of Calcutta High Court on 5th February 2002.

• Appointed Judge of the Delhi High Court on 8th August 2016.

• Sworn in as Chief Justice of Madras High Court on 5th April 2017.

• Elevated as Judge of Supreme Court on 7th August 2018.

• Justice Bhushan Ramkrishna Gavai will serve as the 52nd Chief Justice of India, in current continuing the legacy of upholding the Constitution of India.

• Sanjay Kishan Kaul

• He practiced mainly in the Commercial, Civil, Writ, Original, and Company jurisdictions of the High Court of Delhi and the Supreme Court of India.

• He remained Advocate-on-Record of the Supreme Court of India from 1987 to 1999 and was designated as a Senior Advocate in December 1999.

• He was appointed as a Judge of the Supreme Court of India on 17th February 2017.

Q45. Answer: (c) Norway

The correct answer is Norway.

• Norway ranked first in the Human Development Index Report 2020 prepared by the United Nations Development Programme.

Key Points

• Human Development Index:

• About:

• HDI emphasizes that people and their capabilities should be the ultimate criteria for assessing the development of a country, not economic growth alone.

• Based on three Basic Dimensions of Human Development:

• A long and healthy life,

• Access to knowledge, and

• A decent standard of living.

• Top Performers for 2019:

• Norway topped the index, followed by Ireland and Switzerland. Hong Kong and Iceland complete the top five.

• Performance of the Asian Region:

• Singapore was ranked 11, Saudi Arabia 40, and Malaysia was at 62 in the global index, representing the top bracket among the Asian countries with “very high human development".

• Sri Lanka (72), Thailand (79), China (85) and Indonesia and Philippines (both 107), and Vietnam (117), among others, were “high human development" countries.

• India, Bhutan, Bangladesh, Myanmar, Nepal, Cambodia, Kenya and Pakistan were ranked among countries with “medium human development" with ranks between 120 and 156.

Important Points

• Human Development Report 2020

• Released in Dec 2020 – The theme is ‘Human Development and the Anthropocene’

• India’s rank – 131/189 countries

• HDI of India – 0.645 (medium human development category)

• 50% increase in HDI since 1990 – 0.645 (0.429)

• Since 1990, life expectancy at birth in India increased by 12 years

Q46. Answer: (a) 15,000

Shortcut Trick

Effective Rate of Interest for 8 months = (18 / 12) × 8 = 12%

Number of time periods = 16 months ÷ 8 months = 2

Effective CI percentage for 2 periods = 12 + 12 + (12 × 12 / 100) = 25.44%

25.44% of Sum = Rs. 3,816 => 100% of Sum = (3816 / 25.44) × 100 = Rs. 15,000

Therefore The correct answer is Rs. 15,000.

Alternate Method

Given: Rate (R) = 18% p.a., Time = 1 year 4 months = 16 months, CI = Rs. 3,816, Compounding = 8-monthly.

Formula: CI = $P[(1 + r/100)^n - 1]$

=> Effective Rate (r) = 18% × (8/12) = 12% per period

=> Number of periods (n) = 16 / 8 = 2

=> $3816 = P[(1 + 12/100)^2 - 1]$

=> $3816 = P[(1.12)^2 - 1]$

=> $3816 = P[1.2544 - 1]$

=> $3816 = P \times 0.2544$

=> $P = 3816 \div 0.2544$

=> P = 15,000

Therefore The correct answer is Rs. 15,000.

Additional Information

Effective Rate for Compounding

When interest is compounded k-monthly, the rate becomes (R/12) × k and time periods become (T × 12)/k.

CI for 2 Periods

For two equal periods of rate r%, the net effective percentage is $r + r + (r^2/100)\%$.

Difference between CI and SI

For 2 years (or 2 periods), the difference is $P(r/100)^2$.

Q47. Answer: (b) 4 hrs 30 min

Shortcut Trick

Convert stream speed to km/h: (5/6) × (18/5) = 3 km/h.

Upstream Speed = Still water speed − Stream speed = 11 − 3 = 8 km/h.

Time taken = Distance ÷ Upstream Speed = 36 ÷ 8 = 4.5 hours.

4.5 hours = 4 hours 30 minutes.

Therefore The correct answer is 4 hr 30 min.

Alternate Method

Given:

Speed of boat in still water (u) = 11 km/h

Speed of stream (v) = 5/6 m/s
Distance = 36 km
Formula Used:
=> Speed in km/h = Speed in m/s × (18/5)
=> Upstream Speed = u − v
=> Time = Distance ÷ Speed
Calculations:
=> Speed of stream (v) = (5/6) × (18/5) km/h
=> v = 3 km/h
=> Upstream speed = 11 − 3 = 8 km/h
=> Time required = 36 ÷ 8 hours
=> Time = 4.5 hours
=> Time = 4 hours + 0.5 × 60 minutes = 4 hours 30 minutes
Therefore The correct answer is 4 hr 30 min.
Additional Information
Downstream Speed
When rowing with the flow of the stream, the speed is the sum of the still water speed and stream speed (u + v).
Unit Conversion
To convert m/s to km/h, multiply by 18/5. To convert km/h to m/s, multiply by 5/18.
Average Speed in Still Water
Still water speed (u) = (Downstream speed + Upstream speed) ÷ 2.

Q48. Answer: (b) Tuesday

• As 2012 is divisible by 4. So, it is a leap year.
• Number of odd days in a leap year = Remainder of (366 ÷ 7) = 2
• So, on 01^(st) January 2013, the day would be → Day on 01^(st)Jan 2012 + 2
→ Sunday + 2
→ Tuesday
Hence, 'option 2' is the correct answer.

Q49. Answer: (d) B

According to given information,
• Arranging products from the costliest to the cheapest.
• 'A' is cheaper than 'C' but costlier than 'B'.
So, C > A > B
• 'E' is costlier than 'C' but cheaper than 'D'.
So, D > E > C
♦ Combining both sequences: D > E > C > A > B
Thus, clearly B is the cheapest.
Hence, 'option 4' is the correct answer.

Q50. Answer: (d) Both statements I and II together are sufficient to answer the question

• Statement I: Sujatha's birthday can be on → Wednesday or Thursday or Friday.
Thus, Statement I alone is not sufficient as no definite answer can be given.
• Statement II: Sujatha's birthday can be on → Tuesday or Wednesday
Thus, Statement II alone is not sufficient as no definite answer can be given.
• Combining data in Statement I and Statement II:
Sujatha's birthday can be on → Wednesday
Thus, both statements are required.
Hence, 'option 4' is the correct answer.

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Q51. Answer: (d) Lahaul-Spiti

The correct answer is Lahaul-Spiti.

Key Points

• Atal Tunnel:

• On October 3, 2020, Prime Minister Narendra Modi inaugurated the 'Atal Tunnel' World's Longest Highway Tunnel in Manali, Himachal Pradesh.

• The 9.02 Kilometre Long Tunnel has been constructed by Border Roads Organisation (BRO) at a cost of INR 3, 300 crores.

• It connects Manali and Lahaul-Spiti Valley.

Important Points

• The Tunnel is built in the Pir Panjal Range of the Himalayas at an altitude of 3000 Meters (10, 000 Feet) from the Mean Sea Level (MSL).

• Prior to the construction of the Tunnel, Lahaul-Spiti valley was cut off for 6 months due to heavy snowfall.

• It reduces the road distance between Manali and Leh by 46 kilometres and time by about 4 to 5 hours, and the distance between Manali and Keylong (Himachal) will be reduced by 3-4 hours.

• The South Portal (SP) of the Atal Tunnel has located a distance of 25 kilometres from Manali and the North Portal (NP) is located near the village of Telling, Sissu, in Lahaul Valley.

• The Tunnel can withstand a traffic density of 3, 000 cars a day and 1, 500 trucks a day at a maximum speed of 80 Kilometres Per Hour.

Q52. Answer: (d) 0.55

Given:

$\sqrt{0.25} + 2\sqrt{0.0049} - 0.3\sqrt{0.09}$

Calculation:

$\sqrt{0.25} + 2\sqrt{0.0049} - 0.3\sqrt{0.09}$

$\Rightarrow 0.5 + 2 \times 0.07 - 0.3 \times 0.3$

$\Rightarrow 0.5 + 0.14 - 0.09$

$\Rightarrow 0.55$

Therefore Required answer is 0.55

Q53. Answer: (c) Universal Serial Bus

The correct answer is Universal Serial Bus.

Key Points

• The full form of USB is Universal Serial Bus.

• USB is a plug and play interface that allows a computer to communicate with external and other devices.

• The first commercial release of the Universal Serial Bus (version 1.0) was in January 1996.

• USB Pendrive is a Secondary type of storage device.

• USB connectors come in different shapes and sizes. They are of various types which include the standard USB, Mini USB, and Micro USB, have two or more variations of connectors.

Additional Information

• A primary storage device is a storage medium that holds a memory for short periods of time while a computer is running.

• Random-access memory (RAM) and cache are both examples of a primary storage device.

• Tertiary storage devices comprise high-capacity data archives designed to include vast numbers of removable media, such as tapes or optical discs.

Q54. Answer: (d) South-west

The given information can be depicted as follows-

Thus, Rekha is facing South-West direction at the end.

Hence, 'option 4' is the correct answer.

Q55. Answer: (b) It is determined by the market forces of demand and supply.

The correct answer is It is determined by the market forces of demand and supply.

Key Points

• A floating exchange rate is a regime where the currency price of a nation is set by the forex market based on supply and demand relative to other currencies.

• This is in contrast to a fixed exchange rate, in which the government entirely or predominantly determines the rate.

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• A floating exchange rate means that currencies change in relative value all the time.

• For example, one U.S dollar might buy one British Pound today, but it might only buy 0.95 British Pounds tomorrow.

Additional Information

• Demand: Demand is an economic term that refers to the number of products or services that consumers wish to purchase at any given price level.

• Supply: In economics, supply is the number of goods an individual or business provides to the market.

• Forex: Foreign exchange is a global market for exchanging national currencies with one another.

Q56. Answer: (a) Only conclusion I follows

The least possible Venn diagram for given statements is-

Conclusions:

I. Some flowers are beautiful. → Follows (As can be seen in the Venn diagram, a part of flowers that is orchid is beautiful)

II. All beautiful are flowers. → Does not follow (it is possible but not definite)

Hence, 'option 1' is the correct answer.

Q57. Answer: (b) 80

According to the given information-

1. V scored more than only T and X. W scored less than only U.

2. X did not score the least. So, Case I is eliminated.

The one who scored the third highest marks, scored 91 marks. X scored 72 marks.

Final arrangement will be-

Thus, V's score should be more than 72 and less than 91.

Hence, 'option 2' is the correct answer.

Q58. Answer: (b) Rs. 11,500

Concept used:

S.I = PTR/100

P = Principal

T = time

R = rate

Calculation:

Let the sum be Rs. 100x

According to the question,

$(100x \times 12 \times 11)(100 \times 2) - (100x \times 15 \times 10)/(100 \times 3) = 1840$

$\Rightarrow 66x - 50x = 1840$

$\Rightarrow 16x = 1840$

$\Rightarrow x = 1840/16$

$\Rightarrow x = 115$

So, sum = $100 \times 115 = 11500$

Therefore The sum is Rs. 11500

Q59. Answer: (a) liver

The correct answer is liver.

Key Points

• Hepatitis A is caused by a virus that infects liver cells and causes inflammation.

• Hepatitis A virus can spread:

• Eating food handled by someone with the virus who doesn't thoroughly wash his or her hands after using the toilet

• Drinking contaminated water

• Eating raw shellfish from water polluted with sewage

• Being in close contact with a person who's infected — even if that person has no signs or symptoms

• Having sex with someone who has the virus

Important Points

• Difference between hepatitis A, hepatitis B, and hepatitis C:

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• Hepatitis A, Hepatitis B, and Hepatitis C are liver infections caused by three different viruses.

• Hepatitis A is usually a short-term infection and does not become a long-term infection.

• Hepatitis B and hepatitis C can also begin as short-term infections but in some people, the virus remains in the body and causes chronic, or lifelong, infection.

• There are vaccines to prevent hepatitis A and hepatitis B; however, there is no vaccine for hepatitis C.

Additional Information

• Americans Harvey J Alter and Charles M Rice, and British scientist Michael Houghton were awarded the Nobel Prize for Medicine or Physiology(2020) for the discovery of the hepatitis C virus.

Q60. Answer: (b) Sportsperson

The correct answer is Sportsperson.

Key Points

• Gianluigi Donnarumma is an Italian footballer who plays as a goalkeeper for Italy national team.

• He also plays for Ligue 1 club Paris Saint-Germain.

In News

• Donnarumma saved 2 penalties in the Euro cup 2020 final against England.

• He was crowned Euro 2020 Player of the Tournament.

• He has joined Paris Saint-Germain on a five-year deal after leaving Serie A club AC Milan on a free transfer.

Q61. Answer: (d) East; 22 km

According to the question, the path she travelled can be depicted as-

Thus, she is in east direction from her house and is at a distance of (15 km + 7 km) = 22 km

Hence, 'option 4' is the correct answer.

Q62. Answer: (b) Fe

The correct answer is Fe.

Key Points

• D block elements are the elements that can be found from the third group to the twelfth group of the modern periodic table.

• The valance electrons of these elements fall under the d orbital.

• D block elements are also referred to as transition elements or transition metals.

• The first three rows of the d block elements correspond to the 3d, 4d and 5d orbitals.

• 3d - Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn.

• 4d - Y, Zr, Nb, Mo, Tc, Ru, Rh, Pd, Ag, Cd

• 5d - La, Hf, Ta, W, Re, Os, Ir, Pt, Au, Hg

• Fe (Iron) is in Group - 8 and period -4. Atomic number= 26.

Explanation-

• The electronic configuration of the iron is [Ar] 3d^6 $4s^2$

• The electronic configuration of the calcium is [Ar] $4s^2$

• The electronic configuration of the mg is [Ne] $3s^2$

• The electronic configuration of the Na is[Ne] $3s^1$

• From the electronic configuration of the various elements, we can understand that the Fe comes under the d block element as its outermost electron falls under the d shell.

Hence due to the Aufbau principle which states that electrons fill lower-energy atomic orbitals before filling higher-energy ones 3d is written before 4s,

Hence the Fe comes under the d block element

Important Points

• Calcium (Ca) is one of the alkaline-earth metals of Group 2 (IIa) of the periodic table. Atomic number= 20.

• Magnesium (Mg) is another alkaline-earth metal of Group 2 (IIa) of the periodic table. Atomic number = 12.

• Sodium (Na) is the most common alkali metal and the sixth most abundant element on earth, Atomic number= 11.

Q63. Answer: (d) 30√3 m

Shortcut Trick

In a 30°-60°-90° triangle, the sides opposite to these angles are in the ratio 1 : √3 : 2.

The height of the tower is opposite the 30° angle, so 1 unit = 30 m.

The distance from the foot is opposite the 60° angle, so √3 units = 30 × √3 m.

Distance = 30√3 m.

Therefore The correct answer is 30√3 m.

Alternate Method

Given:

Height of tower (AB) = 30 m

Angle of depression = 30°

Angle of elevation (θ) = 30° (Alternate interior angles are equal)

Formula Used:

tan θ = Perpendicular / Base

Calculations:

=> tan 30° = AB / BC

=> 1 / √3 = 30 / BC

=> BC = 30 × √3

=> BC = 30√3 m

Therefore The correct answer is 30√3 m.

Additional Information

Angle of Depression and Elevation

The Angle of Depression from an observer's eye to an object below is numerically equal to the Angle of Elevation from the object to the observer's eye because they are alternate interior angles.

Trigonometric Ratios

For height and distance problems, tan θ (Opposite/Adjacent) and cot θ (Adjacent/Opposite) are the most commonly used ratios.

30-60-90 Triangle Rule

In a right triangle with angles 30° and 60°, the side ratio is 1 : √3 : 2. The side opposite 30° is x, the side opposite 60° is x√3, and the hypotenuse is 2x.

Q64. Answer: (a) 6

Given:

The square of a positive number is 6 more than five times the number

Calculation:

Let the number be a

According to the question,

$a^2 = 5a + 6$

=> a2 - 5a - 6 = 0

=> a2 - 6a + a - 6 = 0

=> a(a - 6) + 1(a - 6) = 0

=> (a - 6)(a + 1) = 0

=> a = 6 or - 1 but -1 cannot be the number as given it is a positive number

Therefore Required answer is 6.

Q65. Answer: (a) Ashtadhyayi

The correct answer is Ashtadhyayi.

Key Points

• Ashtadhyayi means Eight Chapters.

• Sanskrit treatise on grammar was written in the 6th to 5th century BCE by the Indian grammarian Panini.

• This work set the linguistic standards for Classical Sanskrit.

• It sums up in 4,000 sutras the science of phonetics and grammar that had evolved in the Vedic religion.

• Panini was a Sanskrit grammarian who gave a comprehensive and scientific theory of phonetics, phonology, and morphology.

Important Points

• Lalitavistara is the Sanskrit word that means Detailed Narration of the Sport (of the Buddha).

• The legendary life of the Gautama Buddha is written in a combination of Sanskrit and a vernacular.

• Mahavastu is the Sanskrit word that means Great Story.

• The important legendary life of the buddha was produced as a late canonical work by the Mahasanghika school of early

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Buddhism and presented as a historical introduction to the Vinaya.

• Buddhacharita is an epic poem in the Sanskrit Mahakavya style on the life of Gautama Buddha by Asvaghosa.

Q66. Answer: (a) Britain

The correct answer is Britain.

Key Points

• Provisions were borrowed by our Constitution makers from the British constitution

• Law-making Procedure

• First Past the Post

• Parliamentary Form of Government

• The idea of the Rule of Law

• Institution of the Speaker and her/his role Law-making procedure

Important Points

• Provisions were borrowed by our Constitution makers from the Canadian Constitution

• A quasi-federal form of government (a federal system with a strong central government)

• The idea of Residual Powers

• Provisions were borrowed by our Constitution makers from Irish Constitution

• Directive Principles of State Policy

• Provisions were borrowed by our Constitution makers from the French Constitution

• Principles of Liberty, Equality, and Fraternity

• Provisions were borrowed by our Constitution makers from the United States Constitution

• Charter of Fundamental Rights

• Power of Judicial Review and independence of the judiciary

• Provisions were borrowed by our Constitution makers from Japan

• Procedure Established by law.

Q67. Answer: (b) 88.8 km/h

Shortcut Trick

When the distance for both journeys is the same, the Average Speed is the Harmonic Mean of the two speeds.

Formula: Average Speed = (2 × x × y) ÷ (x + y)

Here, x = 74 km/h and y = 111 km/h.

Average Speed = (2 × 74 × 111) ÷ (74 + 111) = 16428 ÷ 185

Average Speed = 88.8 km/h.

Therefore The correct answer is 88.8 km/h.

Alternate Method

Given:

Speed from A to B (S1) = 74 km/h

Speed from B to A (S2) = 111 km/h

Formula Used:

Average Speed = Total Distance ÷ Total Time

=> Let the distance between A and B be the LCM of 74 and 111, which is 222 km.

=> Time taken from A to B (T1) = 222 ÷ 74 = 3 hours.

=> Time taken from B to A (T2) = 222 ÷ 111 = 2 hours.

=> Total Distance = 222 + 222 = 444 km.

=> Total Time = 3 + 2 = 5 hours.

=> Average Speed = 444 ÷ 5 = 88.8 km/h.

Therefore The correct answer is 88.8 km/h.

Additional Information

Average Speed for Unequal Distances

If a person covers distances d1, d2, d3 at speeds s1, s2, s3, then Average Speed = (d1 + d2 + d3) ÷ (d1/s1 + d2/s2 + d3/s3).

Unit Conversion

To convert speed from km/h to m/s, multiply by 5/18. To convert from m/s to km/h, multiply by 18/5.

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Constant Time Scenario

If a person travels at speed x for time t and speed y for the same time t, the Average Speed is the Arithmetic Mean: (x + y) ÷ 2.

Q68. Answer: (b) Vikram Chandra

The correct answer is Vikram Chandra.

Key Points

• Vikram Chandra is an Indian-American writer.

• His first novel, Red Earth and Pouring Rain, won the 1996 Commonwealth writer prize for Best First Book.

Important Points

• Suketu Mehta

• He is a New York-based author of the book Maximum City.

• Finalist for the 2005 Pulitzer prize.

• Arundhati Roy

• She is an Indian author, actress, and political activist.

• She wrote the noble The God of small things (1997), which won the Booker prize.

Q69. Answer: (b) The data given are not sufficient to take a decision.

On the basis of the criteria for the selection and the information given about Rahul, the following deductions can be made-

A. Be a graduate with at least 50% marks → Yes, Rahul satisfies this criterion as he is a 1st class (60% or more) graduate.

B. Have a qualified bachelor's degree in education → Yes, Rahul satisfies this criterion since he has also completed B.Ed.

C. Not be less than 21 years and not more than 32 years as on 1st July 2021. → No information about his present age is provided.

D. For a candidate with Master in Education, the school board may relax the upper age limit. → No information about Rahul's Masters is mentioned anywhere.

• As no information about Rahul's age or Masters is provided, so a decision can not be taken.

Hence, 'option 2' is the correct answer.

Q70. Answer: (c) 12 cm

Given:

The radius of a sphere and the base radius of the cone both are equal to 3√ 2 cm

Concept used:

The surface area of the sphere = 4πr2

Total surface area of the cone = π(r + l)r

Slant height = √(radius² + height²)

r = radius

l = slant height

Calculation:

Let slant height and height of the cone be l and h

According to the question,

$4\pi r^2 = \pi(r + l)\, r$

$\Rightarrow 4 \times \pi \times 3\sqrt{2}^2 = \pi(3\sqrt{2} + l)3\sqrt{2}$

$\Rightarrow 4 \times 3\sqrt{2} = 3\sqrt{2} + l$

$\Rightarrow 12\sqrt{2} = 3\sqrt{2} + l$

$\Rightarrow 9\sqrt{2} = l$

$9\sqrt{2}^2 = 3\sqrt{2}^2 + h^2$

$\Rightarrow 162 - 18 = h2$

$\Rightarrow 144 = h2$

$\Rightarrow 12 = h$

So, height of the cone = 12 cm

Therefore The height of the cone is 12

Q71. Answer: (a) Only conclusion I follows

The least possible Venn diagram is for the given statements is-

Conclusions:

(I) Some clothes are dresses → Follows (part of clothes is dresses)

(II) All shirts are dresses.→ Does not follow (it is possible but not definite)

Hence, 'option 1' is the correct answer.

Q72. Answer: (a) 13

Given:

8-digit number 4523a60b is divisible by 15

Concept used:

a number is completely divisible by 3 if the sum of its digits is divisible by 3.

If the last number is either 0 or 5, the entire number is divisible by 5.

Calculation:

Factors of 15 = (3 × 5) and the divisibility rule of 15 says that sum of digits be divided by 3 and the last number will be 5.

Possible values of b are 0 and 5

Now,

4 + 5 + 2 + 3 + a + 6 + 0 + 0 = 20 + a

Here a can be 1, 4, 7

For greatest we need to take 7

So, a + b = 7 + 0 = 7 which is not present in the option

Again,

4 + 5 + 2 + 3 + a + 6 + 0 + 5 = 25 + a

Here a can be 2, 5, 8

For greatest we need to take 8

So, a + b = 8 + 5 = 13 which is present in the option

Therefore Required answer is 13

Q73. Answer: (b) Gujarat

The correct answer is Gujarat.

Key Points

• Siddi, also known by the names of sheedi and Habshi, is one of the major tribal communities of Gujarat, while a few of them also live in parts of Karnataka, Goa, and Maharastra.

• Most Siddis are believed to be the descendants of slaves, sailors, servants, and merchants from the Bantu-speaking parts of East Africa who arrived and became residents of the subcontinent during the 1200-1900 CE period.

• The cultural heritage of Siddis dates back almost 300 years.

Important Points

• Gujarat

• Capital - Gandhinagar

• CM - Bhupendrabhai Patel

• Governor - Acharya Devvrat

Q74. Answer: (a) population pyramid

The correct answer is population pyramid.

Key Points

• Population Pyramid:

• The population pyramid tells the story of the people living in the country. As it shows the composition of males and females of the specific country.

• The population pyramid shows the age-wise composition of the country. This includes the working-age population as well as the dependent population of the country.

• Population pyramids are useful for studying the future of a region as well as examining historical and current population trends.

Hence, The Population pyramid tells the story of the people living in the country, it also shows the dependent population of the country.

Q75. Answer: (a) M

Persons sitting in Row 1 facing South: J, K, L, M & N

Persons sitting in Row 2 facing North: Q, R, S, T & U

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According to given information,

1. Only two people sit to the left of Q. J faces an immediate neighbour of Q. M sits to the immediate left of J.

2. The one who faces K sits to the immediate left of S. Neither K nor S sit at any of the extreme ends. Thus, Case I is eliminated as this is not possible in Case I.

3. Only two people sit between S and T. N faces an immediate neighbour of U.

Thus, clearly M faces R.

Hence, 'option 1' is the correct answer.

Q76. Answer: (d) Madurai

The correct answer is Madurai.

Key Points

• Madurai Shanmukhavadivu Subbulakshmi is a name that is synonymous with the world of Carnatic music.

• She was the first singer to be presented with India's highest civil honor, the Bharat Ratna.

• When she was honored with the Ramon Magsaysay award, which is considered Asia's Nobel Prize, she became the first Indian musician to do so.

Important Points

• Carnatic Music

• It is a form of Indian Classical music with origins in Southern India

• Lyrics in Carnatic music are largely devotional; most of the songs emphasize love and other social issues or rest on the concept of sublimation of human emotions for union with the divine.

Q77. Answer: (c) Europe

The correct answer is Europe.

Key Points

• The name Scandinavia comes from that a region in southern Sweden called Skane or Scania.

• The terms Norden and Nordic, both meaning "North," have also been used to refer collectively to the five Scandinavian countries i.e., Sweden, Norway, Denmark, Finland, Iceland, and the Faroe Islands.

• It is a subregion in Northern Europe, with strong historical, cultural, and linguistic ties between its constituent peoples.

Additional Information

Country	Religion
North America	Christianity
Africa	Christianity or Islam
Asia	Buddhism, Christianity, Confucianism, Hinduism, Islam, Jainism, Judaism, and many more.

Q78. Answer: (b) 4 hours 48 minutes

Given:

Pipe A can fill 50% of a tank in 4 hours

Pipe B can completely fill the same tank in 12 hours

Concept used:

Total work = LCM of time taken pipes to fill a tank alone

Calculation:

Pipe A can fill 50% of a tank in 4 hours

So, full in 8 hours

Now, LCM of 12 and 8 is 24 i.e total work

Efficiency of A and B = 24/8 = 3, 24/12 = 2

Effective efficiency = 5

Time = 24/5 = 44/5 hours

4/5 hours = 48 minutes

Therefore Required time is 4 hours 48 minutes

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Q79. Answer: (a) 48

Given:

x = (2 + √3)/(2 - √3)

Concept used:

Concept of Rationalisation

Calculation:

x = (2 + √ 3)/(2 - √ 3)

=> x = (2 + √ 3)(2 + √ 3)/(2 - √ 3)(2 + √ 3)

=> x = ((2 + √ 3)²)/(2² - (√ 3)²)

=> x = ((2 + √ 3)²)/(4 - 3)

=> x = (2 + √ 3)²

=> x = 2² + √3² + 2 × 2 × √3

=> x = 4 + 3 + 4√3 = 7 + 4√3

(x - 7)2

=> (7 + 4√3 - 7)²

=> (4√3)2

=> 48

Therefore Required answer is 48

Q80. Answer: (a) UAE

The correct answer is UAE.

Key Points

• The Palm Jumeirah is an archipelago of artificial islands in Dubai, in the United Arab Emirates, created using land reclamation which extends into the Persian Gulf.

• From the air, the archipelago resembles a stylized palm tree within a circle.

• Palm Jumeirah was built in the early 21st century and was largely financed by Dubai's substantial income from petroleum.

Important Points

• United Arab Emirates:

• Capital - Abu Dhabi

• President - Mohamed bin Zayed al Nahyan.

Q81. Answer: (d) 3

Given:

810.16 × 30.36

Concept used:

(a^b)^c = a ^((b × c))

Calculation:

810.16 × 30.36

=> 3^(4 ×)0.16 × 30.36

=> 30.64 × 30.36

=> 30.64 + 0.36

=> 31

=> 3

Therefore Required answer is 3

Q82. Answer: (d) 2 1/3

Given:

95 ÷ 15 - 34 ÷ {18 - 4 ÷ (3 × 12) × 9} × 2

Concept used:

Calculation:

95 ÷ 15 - 34 ÷ {18 - 4 ÷ (3 × 12) × 9} × 2

=> 95 ÷ 15 - 34 ÷ {18 - 4 ÷ 36 × 9} × 2

=> 95 ÷ 15 - 34 ÷ {18 - 1/9 × 9} × 2

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=> 95 ÷ 15 - 34 ÷ {18 - 1} × 2
=> 95 ÷ 15 - 34 ÷ 17 × 2
=> 19/3 - 2 × 2
=> 19/3 - 4
=> (19 - 12)/3
=> 7/3 = 2 1/3
Therefore Required answer is 2 1/3

Q83. Answer: (a) 1,166

Given:
A purchased an item for Rs. 12,300. He spent Rs. 200 as cartage.
A sold it to B at 10% profit
B sold it C at 6% profit
Discount % of C = 10%
Concept used:
Selling price = Cost price + Cost price × Profit%
Selling price = Marked price - Markes price × Discount%
Calculation:
A's actual cost = 12300 + 200 = Rs. 12500
Here A's selling price = B's cost price
So, A's selling price = 12500 × 11/10
=> 13750 = B's cost price
Again B sold it to C at a profit of 6%
So, B's selling price = C's cost price
B's selling price = 13750 × 106/100
=> 14575
C's marked price = 14575 + 2915
=> 17490
C's selling price = 17490 × 9/10
=> 15741
Profit of C = 15741 - 14575
=> 1166
Therefore Profit of C is Rs. 1166

Q84. Answer: (a) Wednesday

• According to Roshni, Sreshta's birthday day can be on → Tuesday and Wednesday
• According to Kalyan, Sreshta's birthday day can be on → Wednesday and Thursday
• Clearly, Wednesday is the common day that satisfies both the conditions.
Hence, 'option 1' is the correct answer.

Q85. Answer: (a) 15/31

Calculation:
1/2 = 0.5
Option 1:
15/31 = 0.483
Option 2:
5/9 = 0.555
Option 3:
8/15 = 0.533
Option 4:
11/21 = 0.523
Therefore Required answer is 15/31

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Q86. Answer: (b) 1932

The correct answer is 1932.

Key Points

• JRD Tata flew the first flight of Tata Airlines on October 15, 1932.

• The airline came to be known as Air India following its nationalization post-independence.

• During its initial years, Air India was called Tata Airlines.

• It was later nationalized and renamed Air India post-independence of India, which meant that the Tatas stayed out of the Business.

In News

• Life came in a full circle for Maharaja on Thursday, January 27 as India's first commercial carrier Air India returned to the Tata Group on the Day.

• The Government officially handed over the national carrier to the business conglomerate, after PM Modi met Tata Group Chairperson N, Chandrasekaran.

• Tata Sons announced the appointment of Campbell Wilson as the MD and CEO of Air India

Q87. Answer: (a) X

No. of persons- 6

Name of persons- S, V, O, Y, X and T

• Firstly, arranging them in the order of their classes:

1. S is in the highest class. S, V and O are in class 9, 7 and 3, respectively. X is in a class senior to V.

2. T is in a class senior to Y but junior to V.

• Then, arranging them in the order of their height:

1. O is taller than V but shorter than T. X is taller than Y but shorter than V.

2. S is the tallest in the highest class.

Persons senior to V in all cases: S and X

Persons shorter than V: X and Y

Thus, 'X' is the only person senior but shorter than V.

Hence, 'option 1' is the correct answer.

Q88. Answer: (d) NISAR

The correct answer is NISAR.

Key Points

• NISAR is a joint Earth-observing mission between NASA and ISRO with the goal to make global measurements of the causes and consequences of land surface changes using advanced radar imaging.

• This mission concept and the resulting partnership are in response to the National Academy of Science's 2007 survey of Earth observational priorities for the next decade, known as the decadal survey.

Important Points

• NASA

• It stands for National Aeronautics and Space Administration.

• It is founded on 29 July 1958.

• It is an independent agency of the U.S. federal government responsible for the civil space program, aeronautics research, and space research.

• ISRO

• It stands for Indian Space Research Organisation.

• It is founded on 15 August 1969.

• It operates under the Department of Space which is directly overseen by the PM of India.

Q89. Answer: (d) Rashtriya Sanskriti Mahotsav

The correct answer is Rashtriya Sanskriti Mahotsav.

Key Points

• The second phase of the Rashtriya Sanskriti Mahotsav at Raj Bhawan in Darjeeling, West Bengal.

• It is organized to promote the spirit of Ek Bharat Sreshtha Bharat.

• 11th edition of 'Rashtriya Sanskriti Mahotsav' on February 14, 2021.

• Ten editions were organized in Delhi, Bengaluru, Varanasi, Tawang, Karnataka, Gujarat, Tehri, and Madhya Pradesh.

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Important Points

• Rashtriya Sanskriti Mahotsav:

• It is a flagship festival of the Ministry of culture and tourism. Minister: G. Kishan Reddy.

• The event is organized since 2015.

• It witnesses the active participation of seven Zonal Culture Centres.

• These zonal centers play a key role in taking the vibrant culture of India to the masses rather than confining it to auditoria and galleries.

• This festival showcases the folk and tribal art, music, dance, cuisines, and culture of one state in other states.

Q90. Answer: (b) has no intrinsic value

The correct answer is has no intrinsic value.

Key Points

• Fiat money is a government-issued currency that is not backed by a commodity such as gold.

• Fiat money gives central banks greater control over the economy because they can control how much money is printed.

• Most modern paper currencies, such as the U.S. dollar, the British Pound, the euro, the Indian Rupee etc., are fiat currencies.

• One danger of fiat money is that governments can print too much of it, resulting in hyperinflation.

Q91. Answer: (b) oh si jo

The logic followed here is-

Thus,

'Always' is coded as → 'si'

'Best' is coded as → 'jo'

'Medicines' is coded as → 'oh'

Hence, 'option 2' is the correct answer.

Q92. Answer: (b) 1651 CE

The correct answer is 1651 CE.

Key Points

• In 1651, the first English factory was set up on the banks of river Hugli in Bengal.

• The East India Company convinced merchants to settle near the factory.

• By 1696, the company began building a fort around the Hugli settlement.

Additional Information

• English East India Company:

• The East India Company first arrived via sea route at Surat in the year 1608 for the purpose of establishing trade with India.

• The Battle of Plassey was a decisive victory of the British East India Company over the Nawab of Bengal Siraj-Ud-Daulah and his French allies on 23 June 1757.

• The battle consolidated the Company's presence in Bengal, which later expanded to cover much of India over the next hundred years.

• Fort William was built in 1696 by East India Company by John Goldsborough at Calcutta.

Q93. Answer: (b) Anju Bobby George

The correct answer is Anju Bobby George.

Key Points

• Kerala-based long jumper and Olympian Anju Bobby George has bagged the BBC lifetime achievement award for best athlete in India.

• Anju bagged a bronze medal by clearing 6.70 m in the long jump at the World Athletic Championship 2003 in Paris.

• She was the first Indian athlete ever to win a medal in the world athletics championship.

• She won the Woman of the year Award from world Athletics for grooming young girls to take up sports.

Important Points

• Anita Sood

• She is a former National Women swimming champion of India.

• She became the fastest Asian swimmer to cross the English Channel.

• Diana Edulji

• She is a former Indian Test cricketer.

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• She holds the record for delivering the most balls by any woman cricketer in Women's test history.
• PT Usha
• Her full name is Pilavullakandi Thekkeparambil Usha.
• She is a retired Indian track and field athlete.
• She is best known for her incredible run at the 1984 Los Angeles Olympic Games.

Q94. Answer: (b) 33

Concept of BODMAS will be used in this question-
The logic followed here is-
• 15 × 8 ÷ 12
Solve using BODMAS
15 × 2/3 = 10
• 26 × 6 ÷ 13
Solve using BODMAS
26 × 6/13 = 12
Similarly,
• 11 × 12 ÷ 4
Solve using BODMAS
11 × 3 = 33
Hence, 'option 2' is the correct answer.

Q95. Answer: (b) Four

Given word: DOLPHIN
The alphabets are positioned in the following order-
The given word can be represented as follows-
In forward direction: DH, DI, HI
In backward direction: IL
Thus, here are four pairs of such letters.
Hence. 'option 2' is the correct answer.

Q96. Answer: (d) 18

Given:
The sum of the two numbers is 72.
The numbers are in the ratio 3 : 5
Calculation:
Let the numbers be 3x and 5x
According to the question,
3x + 5x = 72
=> 8x = 72
=> x = 9
Now, the numbers are 3 × 9 = 27 and 5 × 9 = 45
Difference = 45 - 27 = 18
Therefore Difference between the two numbers 18

Q97. Answer: (d) VaU

The correct answer is VaU.
Key Points
• VSCC had developed three different types of ventilators and an oxygen concentrator at a time when a shortage of this critical medical equipment resulted in the deaths of many Covid-19 patients across the country.
• Based on designs, features, and specifications, they named them, Prana, VaU, and Svasta.
• All three are user-friendly, fully automated, and with touch-screen specifications, meeting all safety standards
Important Points
• Vikram Sarabhai Space Centre

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• It is a major space research center of the Indian Space Research Organisation (ISRO) responsible for the design and development of launch vehicle technology.
• Vikram Sarabhai was regarded as the father of the Indian space program.
• It is located in Thiruvananthapuram (Kerala).

Q98. Answer: (d) PVB

The logic followed here is-

• • •

Hence, 'option 4' is the correct answer.

Q99. Answer: (b) 10

The correct answer is 10.

Key Points

• Rig Veda:
• There are 1028 mantras in the Rigveda which include the unpromising Valakhilia hymns.
• The Rig Veda consists of 1028 hymns, organised into ten books known as mandalas.
• They were composed in an archaic language named Vedic that gradually evolved into classical Sanskrit.
• Each mandala has sūktas (hymns) formed by individual strophes.
• The Rig Veda is the earliest of the four Vedas and one of the most important texts of the Hindu tradition.
• It is a large collection of hymns in praise of the gods, which are chanted in various rituals.

Additional Information

• Samaveda
• There are 1549 verses (except 75 verses, all have been taken from Rigveda)
• There are two Upanishads embedded in Samaveda – Chandogya Upanishad and Kena Upanishad
• The Samaveda is considered the root of Indian classical music and dance
• It is considered as the storehouse of the melodious chants
• Though it has lesser verses than Rigveda, however, its texts are larger
• There are three recensions of the text of the Samaveda – Kauthuma, Ranayaniya and Jaimaniya
• Yajurveda
• Stands to mean ‘Worship Knowledge’, Yajurveda dates back to 1100-800 BCE; corresponding with Samaveda.
• It compiles ritual-offering mantras/chants.
• These chants were offered by the priest alongside a person who used to perform a ritual (in most cases yajna fire).
• Atharvaveda
• Stands to mean a tatpurusha compound of Atharvan, an ancient sage, and knowledge (atharvan+knowledge), it dates back to 1000-800 BCE.

Q100. Answer: (c) 18 cm

Given:

The length of the base of a triangle is 6 cm more than the corresponding altitude.

Area of the triangle = 108 cm2

Concept used:

Area of a triangle = 1/2 × b × h

b = base

h = height or altitude

Calculation:

Let the altitude be H cm

So, base = (H + 6) cm

According to the question,

1/2 × H × (H + 6) = 108

=> H^2 + 6H - 216 = 0

=> H2 + 18H - 12H - 216 = 0

=> H(H + 18) - 12(H + 18) = 0

=> (H + 18)(H - 12) = 0

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H = - 18, 12

Length cannot be negative so H = 12

So, base = 12 + 6 = 18 cm

Therefore The length of the base of the triangle is 18 cm

Q101. Answer: (a) 40

Shortcut Trick

Net increase in total marks = 99 − 9 = 90

Increase in class average = 2.25

Number of students = Net increase in total marks ÷ Increase in average

=> Number of students = 90 ÷ 2.25 = 40

Therefore The correct answer is 40 students.

Alternate Method

Given:

Actual marks of Renu = 9

Wrongly entered marks = 99

Increase in average marks of the class = 2.25

Number of Students (N) = Total Error ÷ Avg Increase

Total Error = 99 − 9 = +90 Marks

+2.25

+2.25

...

+2.25

Formula Used:

Average = Sum of all observations ÷ Total number of observations

Calculations:

Let the total number of students in the class be n and the correct sum of marks of all students be S.

=> Correct Average = S ÷ n

=> Incorrect Sum of marks = S − 9 + 99 = S + 90

=> Incorrect Average = (S + 90) ÷ n = (S ÷ n) + (90 ÷ n)

We know that: Incorrect Average − Correct Average = 2.25

=> [(S ÷ n) + (90 ÷ n)] − (S ÷ n) = 2.25

=> 90 ÷ n = 2.25

=> n = 90 ÷ 2.25

=> n = 9000 ÷ 225

=> n = 40

Therefore The correct answer is 40 students.

Additional Information

Concept of Deviation in Averages

When a value is replaced by a larger value, the net increase is distributed equally among all observations. Thus, Change in Average = Difference in values ÷ Total Number of observations.

Combined Average

If two groups have sizes n1 and n2 with averages A1 and A2, then the combined average is (n1 × A1 + n2 × A2) ÷ (n1 + n2).

Change due to Addition

If a new observation is added and the average increases, the new value is greater than the initial average. New Value = Old Average + (Total new elements × Increase in Average).

Q102. Answer: (b) 54.8

Given:

The average of 25 numbers is 48.2.

The average of the first 10 numbers is 47

The average of the last 12 numbers is 49

Concept used:

Average = Sum of elements/No. of elements

Calculation:

Total of 25 numbers = 48.2 × 25

=> 1205

Total of 1st 10 numbers = 47 × 10

=> 470

Total of last 12 numbers = 12 × 49

=> 588

So, remaining = 1205 - 470 - 588

=> 147

Sum of 5 number = 147 + 58 + 69

=> 274

Average = 274/5

=> 54.8

Therefore Required average is 54.8

Confusion PointsNote that, 147 is the sum of remaining 3 number (Because 25 - 10 - 12 = 3).

Hence, 147 + 58 + 69 is the sum of 5 numebrs.

Therefore to calculate the average, we will divide the 274 by 5.

Q103. Answer: (a) 6

Given:

24312k is divisible by 6

Concept used:

If a number is even or a number whose last digit is an even number i.e. 2,4,6,8 including 0, it is always completely divisible by 2

a number is completely divisible by 3 if the sum of its digits is divisible by 3.

Calculation:

For divisible by 6 it must be divisible by both 2 and 3

24312k must be divisible by both 2 and 3

Now, possible values of k = 0, 2, 4, 6, 8

2 + 4 + 3 + 1 + 2 + 0 = 12 divisible by 3

2 + 4 + 3 + 1 + 2 + 2 = 14 not divisible by 3

2 + 4 + 3 + 1 + 2 + 4 = 16 not divisible by 3

2 + 4 + 3 + 1 + 2 + 6 = 18 divisible by 3

2 + 4 + 3 + 1 + 2 + 8 = 20 not divisible by 3

So, greatest value of k is 6

Therefore Required answer is 6

Q104. Answer: (b) Citrus fruits

The correct answer is Citrus fruits.

Key Points

• Citrus fruits are fruits that contain a large amount of citric acid in them.

• They are a rich source of vitamin C.

• The citrus fruits are lemons, limes, oranges, grapefruits, etc.

• Fragrance oils are aroma oils that contain aromatic substances that are volatile in nature.

• Aromatic oils are used in cosmetics, candles, flavouring of food, etc. Various fragrance oils are lemongrass, vanilla, sandalwood, rosehip, peppermint, cinnamon, etc.

• Fragrance oils contain terpenes and terpenoids.

• Fruit juice is extracted from various fruits, made by the extraction of natural liquid in fruits.

• Many types of fruit juices can be made, and depending on the type of fruit used, it can be a source of vitamins and minerals.

• Fruit juices are sources of vitamins such as Vitamin A, C, and minerals such as sodium, potassium, iron, etc.

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Q105. Answer: (c) ÷, -

Given equation: 12 - 4 + 8 × 3 ÷ 7 = 20

Concept of BODMAS will be used in this question-

1) ×, +

On interchanging, 12 - 4 × 8 + 3 ÷ 7 = 20

Solve using BODMAS

12 - 4 × 8 + 3 ÷ 7

= 12 - 4 × 8 + 0.43

= 12 - 32 + 0.43 = 12.43 - 32 = - 19.57 ≠ 20

2) +, -

On interchanging, 12 + 4 - 8 × 3 ÷ 7 = 20

Solve using BODMAS

12 + 4 - 8 × 3 ÷ 7

= 12 + 4 - 8 × 0.43

= 12 + 4 - 3.44 = 16 - 3.44 = 12.56 ≠ 20

3) ÷, -

On interchanging, 12 ÷ 4 + 8 × 3 - 7 = 20

Solve using BODMAS

12 ÷ 4 + 8 × 3 - 7

= 3 + 8 × 3 - 7

= 3 + 24 - 7 = 27 - 7 = 20 = 20

4) ÷, ×

On interchanging, 12 - 4 + 8 ÷ 3 × 7 = 20

Solve using BODMAS

12 - 4 + 8 ÷ 3 × 7

= 12 - 4 + 2.67 × 7

= 12 - 4 + 18.69 = 30.69 - 4 = 26.69 ≠ 20

Hence, 'option 3' is the correct answer.

Q106. Answer: (b) 1970

The correct answer is 1970.

Key Points

• MRTP stands for Monopolies and Restrictive Trade Practices

• MRTP Act was passed in 1969 and became effective from 1970

• This Act was enacted to prevent the concentration of economic power to common detriment, control monopolies, and prohibit monopolistic and restrictive trade practices (MRTP) and matters connected therewith.

Additional Information

Monopolistic and Restrictive Trade Practice under MRTP Act, 1969

• The Monopolistic and Restrictive Trade Practices Act, 1969, was enacted.

• To ensure that the operation of the economic system does not result in the concentration of economic power in hands of few,

• To provide for the control of monopolies, and

• To prohibit monopolistic and restrictive trade practices.

• The MRTP Act extends to the whole of India except Jammu and Kashmir.

Q107. Answer: (b) FTP

The correct answer is FTP.

Key Points

• FTP stands for File Transfer Protocol.

• It is a network protocol for transmitting files between computers over Transmission Control Protocol/Internet Protocol (TCP/IP) connections.

• It is considered an application layer protocol.

Important PointsSMTP

• It stands for Simple Mail Transfer Protocol.

• It is a TCP/IP protocol used in sending and receiving e-mail.

TELNET

• It stands for TELecommunication NETwork.

• Its utility allows users to test connectivity to remote machines and issue commands through the use of a keyboard.

HTTP

• It stands for HyperText Transfer Protocol.

• A protocol for fetching resources such as HTML documents.

Q108. Answer: (d) +

• '3' is the 10^(th)element from the right end.

• '+' is the 7^(th) element to the right of '3'.

Hence, 'option 4' is the correct answer.

7th to the right of the 10th element from the right end = 10 - 7 = 3rd element from the right end = +

Q109. Answer: (b) 10

Given:

The median of a, a/2, 2a/3, a/4, 3a/5 is 6

Concept used:

To find the median, first order the numbers from smallest to largest.

Median of set of n observation when n is odd = [(n + 1)/2]th observation

Calculation:

The numbers are a, a/2, 2a/3, a/4, 3a/5

a/2 = 0.5a

2a/3 = 0.67a

a/4 = 0.25a

3a/5 = 0.6a

So, the numbers in ascending order = a/4, a/2, 3a/5, 2a/3, a

Now,

Medina = (5 + 1)/2 = 3rd term which is 3a/5

So, 3a/5 = 6

=> a = 10

Therefore The value of a is 10

Q110. Answer: (d) Dadabhai Naoroji

The correct answer is Dadabhai Naoroji.

Key Points

• Dadabhai Naoroji in his book, "Poverty and unBritish Rule in India" made the earliest estimation of the poverty line.

• He estimated Rs, 16 to 35 per capita per year.

• The poverty line proposed by him was based on the cost of a subsistence or minimum basic diet (rice or flour, dal, mutton, vegetables, ghee, vegetable oil, and salt).

Important Points

• Dadabhai Naoroji

• He is also known as the Grand Old Man of India.

• He was the 2nd and 9th President of the Indian National Congress.

• He put forward the 'drain of wealth' theory in which he stated that Britain was completely draining India.

Additional Information

• Mahatma Gandhi

• He is known as the 'father of Nation'.

• He was the primary leader of India's independence movement and also the architect of a form of non-violent civil disobedience that would influence the world.

• Rajendra Prasad

• He was the first president of India.

• He was one of the first to receive the Bharat Ratna in 1962.

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• Raja Ram Mohan Roy

• He is considered the 'father of the Indian Renaissance.

• He is renowned for his pioneering role in opposing practices like Sati, child marriage, and social divisions.

Q111. Answer: (c) National emergency

The correct answer is national emergency.

Key Points

• NATIONAL EMERGENCY

• Under Article 352, the President can declare a national emergency when the security of India or a part of it is threatened by war or external aggression or armed rebellion.

• It may be noted that the president can declare a national emergency even before the actual occurrence of war or external aggression or armed rebellion if he is satisfied that there is an imminent danger.

• The President can also issue different proclamations on grounds of war, external aggression, armed rebellion, or imminent danger thereof, whether or not there is a proclamation already issued by him and such proclamation is in operation.

• This provision was added by the 38th Amendment Act of 1975.

• When a national emergency is declared on the ground of ‘war’ or ‘external aggression’, it is known as an ‘External Emergency’.

• On the other hand, when it is declared on the ground of ‘armed rebellion’, it is known as ‘Internal Emergency’.

Q112. Answer: (b) 40

Given:

In a school there are 360, 520 and 280 students in classes 5, 6 and 7 respectively.

Concept used:

HCF method to find the answer

Calculation:

In these types of questions, we calculate HCF of the given numbers

Factors of 360:

$3^2 \times 2^3 \times 5^1$

Factors of 520:

$13^1 \times 23 \times 5^1$

Factors of 280:

$71 \times 23 \times 5^1$

Now, 23 × 51 is common in each

So, HCF = 23 × 51 or 8 × 5 = 40

the maximum number of students who can be accommodated in each bus if each bus must take same number of students, and each bus should have students from the same class = 40

Therefore Required answer is 40

Q113. Answer: (a) 15 minutes

Given:

A man on a cliff observes a boat at an angle of depression of 30°, which is approaching the shore to a point exactly beneath the observer, at a uniform speed. Ten minutes later, the angle of depression of the boat is found to be 60°

Concept used:

Calculation:

Let A and D be the positions of the boat at the two instants.

Let the speed of the boat be v m/min.

Therefore, AD = 10v metres

Let the boat takes t minutes to reach from D to B.

So, BD = vt metres

In ΔDBC

tan60° = BC/DB

=> √3 = h/vt

=> h = √3vt ----(i)

In ΔABC

tan30° = BC/AB

=> 1/√3 = h/(10v + vt)

=> h = (10v + vt)/√3 ----(ii)

From (i) and (ii),

√3vt = (10v + vt)/√3

=> 3vt = 10v + vt

=> 2vt = 10v

=> t = 5

So, total time taken to reach the shore is 10 + 5 = 15 minutes.

Therefore Required answer is 15

Q114. Answer: (c) aabaca

Here -

1) aabc - abac - acba - aabc (No pattern formed)

2) abbc - aacc - aaba - aabc (No pattern formed)

3) aabc - aabc - aabc - aabc (Pattern formed)

• Here, aabc is repeated

4) aabc - aaac - acbb - aabc (No pattern formed)

Hence - 'option 3' is the correct answer.

Q115. Answer: (c) The Chairman and Deputy Chairman of the Legislative Council.

The correct answer is The Chairman and Deputy Chairman of the Legislative Council.

Key Points

• Article 182: States about The chairman and deputy chairman of a state legislate council.

Important Points

Article 169	**States about the Abolition of certain legislative councils in states.**
Article 176	States about the Special address by the governor.
Article 177	States the Rights of minister and advocate general in respect of the houses.
Article 178	States about The Speaker and deputy speaker of the state legislative assembly.
Article 183	States about the Vacation and resignation of, and removal from, the office of chairman and deputy chairman in the state legislature.
Article 180	States the Power of the deputy speaker or another person to perform the duties of the office of, or to act as a speaker in the state legislature.
Article 179	States about the Vacation and resignation of, and removal from, the office of speaker and deputy speaker in the state legislature.
Article 181	States that The Speaker or the deputy speaker no to preside while a resolution for his removal from the office is under consideration in the state legislature
Article 175	States about the Right of the governor to address and send messages to the houses of house.
Article 174	States about the Sessions of the state legislature, propagation and dissolution.
Article 173	States about the Qualification for membership of the state legislature.
Article 172	States about the Duration of the state legislature.
Article 171	States about the Composition of the legislative council.
Article 170	States about the Composition of the legislative assembly.

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Q116. Answer: (d) 30

Given:

k is subtracted from each of 11, 15, 20 and 30 the numbers so obtained in this order are in proportion

Formula Used:

when four numbers a, b, c & d are in proportion

then a/b = c/d or ad = bc

Mean Proportion of a and b = √ab

Calculation:

According to question,

(11 – k)/(15 – k) = (20 – k)/(30 – k)

=> 330 – 30k – 11k + k2 = 300 – 15k – 20k + k2

=> 6k = 30

=> k = 5

Now,

(2k + 2) and 3k2 = 12 and 75

So, mean proportion = √(12 × 75)

=> √900 = 30

Therefore Required answer is 30.

Q117. Answer: (b) Wheel

The correct answer is Wheel.

Key Points

• Buddha preached the First Sermon in a deer forest at Sarnath.

• The symbol of that sermon was a wheel of law also known as Dharmachakra.

• Over centuries, the Great Stupa came to be known as the symbol of dharma or the wheel of Law.

Important Points

• Sanchi Stupa

• It was built by Emperor Ashoka and decorated with some of the best Buddhist artwork in the world.

• It is topped by a harmika to hold the triple umbrella, or chhatraveli, which represents the three jewels of Buddhism.

• It is situated in raisen district Madhya Pradesh.

Q118. Answer: (a) Deccan traps

The correct answer is Deccan traps.

Key Points

• Black Soil found in lava-covered areas is the most conspicuous.

• Those soils are often referred to as regur but are popularly known as "Black cotton soils" since cotton has been the most common traditional crop in areas where they are found.

• Black soils are spread mostly across the Deccan lava plateau and malwa plateau, where there is both moderate rainfall and underlying basaltic rock.

• They are rich in iron and highly moisture-retentive but poor in humus.

Important Points

• Indo Gangetic plains: The greater part of the plain is made up of alluvial soil, deposited by the three main rivers and their tributaries.

• Himalayan mountains: The major soils in the Himalayas are brown hill soil, sub-mountain soils, mountain meadow soil, and red loamy soils.

• Thar desert: Desert soil is mainly found in this area.

Q119. Answer: (a) Book

According to question-

• Pencil => Pen

• Pen => Umbrella

• Umbrella => Book

• Book => Ruler

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• Ruler => Computer

Since, 'Umbrella' is used as protection against rain.

And as mentioned above, 'Umbrella' is called 'Book'.

Hence, 'option 1' is the correct answer.

Q120. Answer: (c) 60%

Calculation:

Number of candidates trained in Batch 2 in 2001 = 144

Number of candidates trained in Batch 5 in 2005 = 90

Difference = 144 - 90 = 54

Required % = 54/90 × 100

=> 60%

Therefore Required answer is 60%

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