RRB NTPC CBT 2 (Level-2) Official Paper (Held On: 13 June 2022 Shift 1) (Previous Year Paper)

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

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FULL TEST

Q1. The selling price of x items is equal to the cost price of 32 items and profit percent is 28%. What is the value of x ?

(a) 30
(b) 24
(c) 21
(d) 25

Q2. Price ceiling refers to:

(a) removal of tax from already costly goods or services
(b) imposition of tax on all the prices of goods or services
(c) imposition of lower limit of tax on costly goods or services
(d) imposition of upper limit of price on goods or services

Q3. What is the capacity of First Green Solar Energy Harnessing Plant using Vanadium based battery technology commissioned by the Indian Army in April 2021?

(a) 62 KVA
(b) 74 KVA
(c) 50 KVA
(d) 56 KVA

Q4. The ISSF (International Shooting Sport Federation) World Cup 2021 was held in which Indian city?

(a) Hyderabad
(b) Chandigarh
(c) Bangalore
(d) New Delhi

Q5. Study the given information carefully and answer the question that follows.

In a film school, eight directors, Avan, Paul, Cameron, Dalton, Kovi, Rajamouli, Prabhu and Hund are sitting around a circular table facing the centre. Dalton is third to the left of Hund. Hund is fourth to the right of Kovi. Paul is third to left of Dalton. Avan is third to the left of Paul. Rajamouli is second to the left of Cameron.

How many persons sit between Avan and Prabhu, when counted from the left of Avan?

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

Q6. 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 two 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.

5, 3 = 98

7, 4 = 279

9, 5 = ?

(a) 904
(b) 604
(c) 854
(d) 754

Q7. Which Amendment to the Constitution of India removed the 'Right to property' from the Fundamental Rights?

(a) 46^(th) Constitutional Amendment 1980
(b) 44^(th) Constitutional Amendment 1978
(c) 42^(nd) Constitutional Amendment 1976
(d) 48^(th) Constitutional Amendment 1981

Q8. A person says that the 26^(th) day of a month is a Friday. Which of the following was the 5^(th) day of the same month?

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

Q9. Which of the following is related to the 73^(th) Amendment of the Constitution of India?

(a) Municipalities
(b) Panchayats
(c) Municipal corporation
(d) Townships

Q10. If $\sin\theta + (1/4)\operatorname{cosec}\theta = 1$ and $0 \le \theta \le 90°$, then find the value of θ.

(a) 45°
(b) 30°
(c) 60°
(d) 0°

Q11. If assumed mean, a = 142.5, $d_i = x_i - a$, f_i = frequency of x_i, the i-th value, $\sum f_i d_i = 130.5$ and $\sum f_i = 90$ then find the arithmetic mean of all the values of x_i.

(a) 143.5
(b) 142.95
(c) 143.3
(d) 143.95

Q12. The 37° C temperature is equal to nearly:

(a) 99.4° F
(b) 98.6° F
(c) 97.4° F
(d) 100.4°F

Q13. Who won the 14^(th) round of the Formula One Italian Grand Prix 2021 held at the Autodromo Nazionale Monza track in Italy?

(a) Daniel Ricciardo
(b) Pierre Gasly
(c) Valtteri Bottas
(d) Lando Norris

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Q14. The inputs used in the production of goods or services to make an economic profit are known as _____.

(a) factors of production
(b) factors of presentation
(c) factors of sales
(d) factors of supply

Q15. In which of the following years did the Muslim League pass a resolution demanding a measure of autonomy for the Muslim majority areas?

(a) 1944
(b) 1940
(c) 1935
(d) 1937

Q16. Study the given letter, number, symbol series and answer the question that follows.

(Left) yen 7 @ 2 W R Z % K 3 P 2 T ε J 1 B M 4 8 & yen E 5 D # 6 (Right)

How many such letters are there, each of which is immediately preceded by a symbol and immediately followed by a number?

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

Q17. If 12 is subtracted from each of n values x1, x2, ?, x_n, then the sum of the resulting numbers is 92. If 8 is subtracted from each of the n values, then the sum of the numbers is 208. What is the mean of the given n values?

(Give your answer correct to one decimal place.)

(a) 16.7
(b) 13.5
(c) 15.2
(d) 14.8

Q18. Simplify the following expression:

2.06 - 3.16 + 4.59 - 1.79

(a) 1.75
(b) 1.65
(c) 1.80
(d) 1.70

Q19. What is the traditional language used in Bhaona which was created by Sankardeva?

(a) Malayalam
(b) Sanskrit
(c) Brajawali
(d) Tamil

Q20. A question is given, followed by two statements labelled I and II. Identify which of the statements is/are sufficient to answer the question.

Question:

In which year was Dheeraj born?

Statements:

(I) Dheeraj at present is 35 years younger to his mother Parvati.

(II) Dheeraj's brother Shan, who was born in 1998, is 45 years younger to his mother Parvati.

(a) I alone is sufficient, while II alone is not sufficient
(b) Both I and II together are sufficient
(c) II alone is sufficient, while I alone is not sufficient
(d) Either I alone or II alone is sufficient

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Q21. What will be the perimeter of a quarter circle having a radius of 10 cm? [Use π = 3.14]

(a) 35.7 cm
(b) 51.4 cm
(c) 15.7 cm
(d) 25.7 cm

Q22. Rai is primarily a folk dance of which of the following states?

(a) Manipur
(b) Madhya Pradesh
(c) Karnataka
(d) Andhra Pradesh

Q23. Which of the following options is the closest approximate value which will come in place of question mark (?) in the following equation?

17.821 + 178.21 - ? = 169.93

(a) 49
(b) 58
(c) 19
(d) 26

Q24. P, Q and R are standing in a queue one behind the other in increasing order of heights such that the shortest is at the front and the tallest at the back. R is neither the first in the queue nor the tallest person. P is NOT standing behind R. Who is the shortest person among them?

(a) Either P or R
(b) P
(c) R
(d) Q

Q25. In a certain code language, 'STEM' is written as VXHQ', and 'ROOT' is written as USRX'. How will 'SEED' be written in that language?

(a) VIGH
(b) UKGG
(c) VIHH
(d) UJHG

Q26. In each of the given number-clusters, the number on the right side of '=' (the equal to sign) is calculated by performing certain mathematical operations on the four numbers on the left of = (the equal to sign). All three number-clusters follow the same pattern. Select the number from among the given options that can replace the question mark (?) in the third number-cluster

11, 8, 5, 2 = 3

19, 14, 9, 4 = 5

27, 20, 13, 6 = ?

(a) 11
(b) 13
(c) 9
(d) 7

Q27. Select the number from among the given options that can replace the question mark (?) in the following series.

9, 7, 28, 26, 65, 63, 126, 124, ?

(a) 137
(b) 217
(c) 136
(d) 215

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Q28. Which state authorities commemorated the death anniversary of Subramania Bharathi, a firebrand poet and freedom fighter, as Mahakavi Day on 11 September 2021?

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

Q29. 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.

KLC : FNL : : YCS : VEZ : : CPQ : ?

(a) TRD
(b) SRE
(c) TSF
(d) NRD

Q30. What is the compound interest on Rs. 2,50,000 at 16% per annum for 9 months, compounded quarterly?

(a) Rs. 32,246
(b) Rs. 31,216
(c) Rs. 30,612
(d) Rs. 32,126

Q31. A building with walls and roofs independent of any other building and with open spaces on all sides within the same plot is called a _____.

(a) Detached building
(b) Semi-detached building
(c) Special building
(d) High rise building

Q32. A working clock is placed on a table in such a manner that at 9.00 p.m the hour hand is pointing towards the north. If the same clock remains in the same position, in which direction will the minute hand point at 6.00 am.?

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

Q33. Simplify: $\sqrt{(\sqrt{1875}/\sqrt{3888} \times \sqrt{768}/\sqrt{1200})}$

(a) $(\sqrt{5})/6$
(b) $(\sqrt{5})/3$
(c) 5/12
(d) 5/6

Q34. The Rig Veda consists of 1028 hymns, organised into ten books known as _____.

(a) Mandalas
(b) Padapatha
(c) Anudatta
(d) Suktas

Q35. The downhill movement of rock and soil under the direct influence of gravity is called:

(a) Mass wasting
(b) Soil creep
(c) Hydraulic action
(d) Solifluction

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Q36. How much water should be added to 90 ml of a 38% sugar solution so that it becomes a 17.1% sugar solution?

(a) 110 ml
(b) 100 ml
(c) 81 ml
(d) 95 ml

Q37. Who among the following denounced the injustice of the caste system and founded the Satyashodhak Samaj (Truth Seekers Society)

(a) Savitri Bai Phule
(b) EV Ramasamy Naicker
(c) Ayyankali
(d) Jyotirao Goviudrao Phule

Q38. A and B are numbers such that A is 40% larger than B. If A is decreased by 20% and B is increased by 38%, then what is the percentage increase in the total value of A and B?

(a) 5%
(b) 41/6%
(c) 81/3%
(d) 10%

Q39. The ratio of the radius of the base and the height of a right circular cylinder is 3 : 2, and its volume is 19404 cm^3. What is the curved surface area (in cm^2) of the cylinder? (Take $\pi = 22/7$)

(a) 1232
(b) 1848
(c) 1386
(d) 924

Q40. The value of $36 \div (8 \times 3) - [3 \div \{4 \times \{3 \times 4 \div (5 - 9) + 6\}\}]$ lies between

(a) 0.7 and 1
(b) 1 and 1.3
(c) 1.3 and 1.6
(d) 1.6 and 1.9

Q41. The state of Telangana has been carved out of which of the following states?

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

Q42. 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.

FL : BH :: RY : NU :: GM : ?

(a) CI
(b) DK
(c) LP
(d) QS

Q43. If $(x + 1) : (x + 5) :: (x + 17) : (x + 53)$ then what is the mean proportional between $(x + 5)$ and $(9x – 1)$ where $x > 0$?

(a) $10\sqrt{2}$
(b) $3\sqrt{2}$
(c) $4\sqrt{13}$
(d) $4\sqrt{3}$

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Q44. India's first building made of bio-bricks from agro-waste was inaugurated at _____.

(a) IIT - Delhi
(b) IIT - Hyderabad
(c) IIT- Kanpur
(d) IIT- Kharagpur

Q45. The Industrial licensing had been abolished for all projects EXCEPT for a short list of industries through the amendments in NIP (New Industrial Policy) in the year _____.

(a) 1956
(b) 1969
(c) 1987
(d) 1991

Q46. If interest is compounded annually at 10% per annum, then what would be the total amount payable on maturity when a sum of Rs. 5700 is invested for a period of two years?

(a) Rs. 6887
(b) Rs. 6897
(c) Rs. 6997
(d) Rs. 6987

Q47. Which of the following countries is the largest milk producer in the world in 2020?

(a) Canada
(b) Denmark
(c) India
(d) China

Q48. Which of the following is the time taken by the CPU to access a location in memory?

(a) Instruction cycle
(b) Memory formatting time
(c) Memory access time
(d) CPU frequency

Q49. The ratio of two numbers is 11 : 4 and their HCF is 16. What is the sum of these two numbers?

(a) 320
(b) 240
(c) 256
(d) 224

Q50. In a certain code language, 'she is beautiful' is written as 'mat mug bit', and 'beautiful and water' is written as 'bit cap lan'. How will 'beautiful' be written in that language?

(a) mat
(b) mug
(c) cap
(d) bit

Q51. What was the name of the giant single landmass which had split to form the present continents of world?

(a) Panthalassa
(b) Pangaea
(c) Gondwana
(d) Tethys

Q52. Each interior angle of a regular polygon measures 168°. How many sides does this polygon have?

(a) 36
(b) 20
(c) 24

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(d) 30

Q53. The Monopolistic and Restrictive Trade Practices Act was passed in the year _____.

(a) 1977
(b) 1973
(c) 1980
(d) 1969

Q54. In different parts of the country, New Year is celebrated under different names. Match the following names with their respective states:

List-I	List-II		
1.	Vishu	a.	Tamil Nadu
2.	Puthandu	b.	West Bengal
3.	Gudi Padwa	c.	Kerala
4.	Poila Boisakh	d.	Maharashtra

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

Q55. If x^4 - 6x² - 1 = 0, then what is the value of (x^6 - x^(-6)) - 3 (x^4 + x^(-4)) ?

(a) 178
(b) 156
(c) 120
(d) 148

Q56. How many such pairs of letters are there in the word UNIVERSAL (in both forward and backward directions) each of which has as many letters between them in the word as there are in English alphabetical order?

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

Q57. From the options given below, choose the one, which figures in the play of Kalidasa's 'Vikramorvasiyam'.

(a) The love of King Agnimitra for Malavika
(b) The story of the love of Pururavas and Urvasi
(c) The story of Dushyanta and Shakuntala
(d) The story of Nal and Damayanti

Q58. TANWA was a project initiated in the late 1980s in Tamil Nadu to train women in latest agricultural techniques and organic farming. What is the full form of TANWA?

(a) Tamil Nadu Women in Agriculture
(b) Tamil Nadu Women Agronomist
(c) Tamil Nadu Women in Agronomy
(d) Tamil Nadu Women Agriculturists

Q59. (5.2 × 5.2 - 2.7 × 2.7)/(7.9 × 2.5) is equal to:

(a) 0.3
(b) 1.0
(c) 1.3
(d) 1.9

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Q60. A circus runs two shows, one with a lion and another with an elephant, separately. The show with the elephant runs for 80 minutes, and the show with the lion runs for 120 minutes. Both shows start at 6 pm. At what time will both shows start again at the same time?

(a) 10:00 pm
(b) 7:40 pm
(c) 7:00 pm
(d) 8:20 pm

Q61. Which Indian state celebrates Makar Sankranti as 'Poush Sankranti'?

(a) Maharashtra
(b) West Bengal
(c) Himachal Pradesh
(d) Rajasthan

Q62. Which of the following algae are rich in proteins and are used as food supplements by space travellers?

a) Spirulina
b) Spirogyra
c) Chlorella
d) Funaria

(a) b and c
(b) a and b
(c) a and c
(d) b and d

Q63. The hill station Mount Abu is located in which of the following mountain chains?

(a) Vindhya
(b) Satpura
(c) Maikal
(d) Aravalli

Q64. A train 225 m long is running at a speed of 145 km/hr. What is the time (in seconds) in which it will pass a man who starts from the engine running at the speed of 17 km/hr in the direction opposite to that of the train?

(a) 4
(b) 5
(c) 6
(d) 7

Q65. Which Amendment of the Indian Constitution added Part IX to the Indian Constitution?

(a) 73
(b) 75
(c) 67
(d) 69

Q66. The National Waterway No. 1 on the Ganga river connects Allahabad with _____.

(a) Kolkata
(b) Haldia
(c) Patna
(d) Hooghly

Q67. Pandit Jasraj, an Indian classical vocalist, belongs to which gharana?

(a) Gwalior
(b) Mewati
(c) Kirana
(d) Agra

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Q68. Seven friends, M, N, O, P, Q, R and S live on seven different floors of the same building, having floors in such a manner that the ground floor is numbered 1, the floor above it number 2, and so on till the topmost floor is numbered 7. M lives on floor number 1. Q lives immediately above M. Only four friends live between the floors of Q and N. Only three friends live between the floors of P and M. R lives immediately below O. Who lives on the sixth floor?

(a) N
(b) O
(c) S
(d) P

Q69. At which place was the 61^(st) Software Technology Park of India (STPI) centre inaugurated on 17 September 2021?

(a) Thiruvananthapuram, Kerala
(b) Bhubaneswar, Orissa
(c) Mohali, Punjab
(d) Kohima, Nagaland

Q70. If letters of the English alphabet are written in reverse order then which letter is 2^(nd) to the right of 9^(th) letter from the left?

(a) R
(b) I
(c) K
(d) P

Q71. A can do 662/3% of a work in 8 days. B is 40% less efficient than A. The two work together for 5 days and then both leave. C completes the remaining work in 6 days. In how many days can A and C together complete the original work?

(a) 99/19
(b) 88/19
(c) 71/2
(d) 71/5

Q72. In each of the number-pairs, the second number is obtained by performing a certain mathematical operation on the first number. Three of the following pairs follow the same pattern and thus form a group. Select the number-pair that does NOT belong to that group.

(a) 14 : 85
(b) 18 : 107
(c) 16 : 97
(d) 22 : 133

Q73. What is the area of a right-angled triangle, the length of whose sides are 10 cm, 24 cm and 26 cm?

(a) 110 cm^2
(b) 120 cm2
(c) 140 cm2
(d) 130 cm2

Q74. Read the given statement and courses of action carefully. Assuming that the information given in the statement is true. decide which of the given courses of action logically follow(s) from the statement.

Statement:

There is a huge increase in the migration of citizens of Country X to foreign countries as the unemployment rate has been increasing in Country X.

Courses of Action:

(I) The citizens of Country X should be provided with alternate sources of income.

(II) Substantial fees should be imposed on all foreign travels by the citizens of Country X.

(a) Only I follows
(b) Neither I nor II follows

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(c) Only II follows
(d) Both I and II follow

Q75. Seven friends Harshita, Eshika, Jaismine, Kapil, Reshma, Mohit and Nilesh are sitting around a circular table facing towards the centre. Harshita is sitting second to the right of Mohit and third to the left of Kapil. Eshika and Jaismine are the immediate neighbours of Kapil. Nilesh is sitting second to the right of Eshika.

Who is sitting to the immediate right of Harshita?

(a) Reshma
(b) Mohit
(c) Jaismine
(d) Nilesh

Q76. Which of the following keyboard shortcuts is used to perform REDO operation in MS-Word?

(a) Alt + Z
(b) Ctrl + Y
(c) Alt + Y
(d) Ctrl + R

Q77. Read the given statements and conclusions carefully. Decide which of the given conclusion/s follow based on the statements.

Statements:

$X < Y, X = J, Y \leq M, Z \leq J$

Conclusions:

I. $Y = J$

II. $M > Z$

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

Q78. The area of the base of a conical tomb is 616 m^2 and its height is 48 m. What is the cost of plastering its curved surface area at Rs. 150 per m^2? (Take $\pi = 22/7$)

(a) Rs. 300000
(b) Rs. 330000
(c) Rs. 315000
(d) Rs. 360000

Q79. 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 goats are animals.

Some animals are carnivores.

Conclusions:

(I) All goats are carnivores.

(II) Some animals are goats.

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

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Q80. Most Ashokan inscriptions were in the _____ language while those in the northwest of the subcontinent were in Aramaic and Greek.

(a) Pali
(b) Sanskrit
(c) Prakrit
(d) Tamil

Q81. The destructive form of Tsunami, also called Seismic Sea Waves are usually caused by the earthquake having:

(a) Magnitude > 7.5
(b) Magnitude 4-5
(c) Magnitude 5-6
(d) Magnitude 2-3

Q82. Which of the following states has the highest population density in India as per Census 2011?

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

Q83. Simplify the following expression:

2/3+4/9÷ (7/2-5/6) = ?

(a) 11/12
(b) 5/6
(c) 1
(d) 7/6

Q84. C is the mother of K. K is the wife of H. R is the brother of K. P is the father of R. How is C related to P?

(a) Brother's wife
(b) Wife
(c) Daughter
(d) Sister

Q85. Mount Fuji, the highest peak in Japan is a type of _____.

(a) block mountain peak
(b) volcanic peak
(c) fold mountain peak
(d) relict peak

Q86. Evan travelled 16 km from his residence towards the north. He then turned 90 degrees towards the left and travelled 12 km. He turned 90 degrees left again and travelled 16 km and stopped. How far is Evan from his residence?

(a) 28 km
(b) 12 km
(c) 4 km
(d) 16 km

Q87. Which of the following boxers won the bronze medal in the 69 kg welterweight semifinals at Tokyo 2020 Summer Olympics on 4 August 2021?

(a) Simranjit Kaur Baatth
(b) Pooja Rani
(c) Lovlina Borgohain
(d) Mary Kom

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Q88. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

Some pencils are pens.

No pen is a sharpener.

All sharpeners are staplers.

Conclusions:

I. At least some staplers are pens.

II. All pencils are pens.

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

Q89. _____ is the sole authority prescribed in the Indian Constitution entrusted with the responsibility of audit of receipts and expenditure of the Union and each State and the Union Territory Governments.

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

Q90. The metallic minerals that occur as alluvial deposits in flood plains or valleys are known as _____.

(a) metallic nodules
(b) bulk deposits
(c) vein deposits
(d) placer deposits

Q91. Six students P, K, M, T, N and G are sitting on a straight bench facing east. K and T are the immediate neighbours of G. P is sitting at one of the extreme ends and is fourth to the right of M. Who is sitting to the immediate left of M?

(a) N
(b) G
(c) K
(d) T

Q92. Which of the following cities is NOT known for iron and steel production in India?

(a) Bhilai
(b) Jamshedpur
(c) Bokaro
(d) Surat

Q93. What is the simple interest (in Rs.) on Rs. 540 at 6% per annum in 31/2 years?

(a) 113.40
(b) 313.40
(c) 13.40
(d) 213.40

Q94. Simplify: 5 + (5 × 5)/5 - 5

(a) 25
(b) 15
(c) 10
(d) 5

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Q95. In a certain code language, 'FRAK' is coded as '35'. and 'MALT' is coded as '45'. How will 'TRIM' be coded in that language?

(a) 60
(b) 58
(c) 59
(d) 61

Q96. 15 people can do a piece of work in 12 days. How many people can complete the same work in 20 days?

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

Q97. Magnoliophyta are the flowering plants which are also known as:

(a) Pteridophytes
(b) Gymnosperms
(c) Angiosperms
(d) Bryophytes

Q98. A 265 m long train is running at 61 km/h. In how much time (in seconds) will it cross another train of length 245 m running at 47 km/h in the opposite direction?

(a) 17
(b) 15
(c) 19
(d) 14

Q99. The principal task of the second five-year plan was to increase national income by about _____ over the five years.

(a) 15%
(b) 25%
(c) 20%
(d) 30%

Q100. 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.

VTZX : NLRP :: MJVQ : EBNI :: PNTR : ?

(a) FGJL
(b) HFLJ
(c) GFLJ
(d) FHJL

Q101. Which two signs and numbers need to be interchanged to make the following equation correct?

2 + 8 ÷ 5 × 4 - 6 = 3

(a) ÷, × and 2, 5
(b) +, - and 6, 8
(c) ÷, - and 2, 6
(d) ÷, + and 8, 5

Q102. Babur, the first Mughal emperor (1526-1530), succeeded to the throne of Ferghana in 1494 when he was only _____ old.

(a) 7 years
(b) 9 years
(c) 12 years
(d) 11 years

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Q103. The least perfect square which is divisible by each of 27, 54 and 72 is

(a) 1296
(b) 1225
(c) 1369
(d) 1156

Q104. According to the Census of India 2011, which of the following is the most populated state of India?

(a) Madhya Pradesh
(b) Rajasthan
(c) Bihar
(d) Uttar Pradesh

Q105. Which of the options given below is divisible by 12?

(a) 284576
(b) 236796
(c) 194792
(d) 157844

Q106. Which of the following persons from the Military Nursing Service has been awarded the National Florence Nightingale Award 2020?

(a) Brigadier SV Saraswati
(b) Lieutenant General (Dr) Madhuri Kanitkar
(c) Surgeon Vice Admiral Sheila S Mathai
(d) Lieutenant General Rajshree Ramasethu

Q107. Which country beat Brazil to win the 47^(th) edition of the Copa America, the international men's football championship?

(a) Peru
(b) Bolivia
(c) Argentina
(d) Chile

Q108. a trader loses 12% by selling an article at Rs 211.20. If sold at Rs.248.40, then his loss/profit percentage

(a) Loss, 5%
(b) Profit, 5.5 %
(c) Profit, 3.5 %
(d) loss, 2.5 %

Q109. Read the given statements and conclusions carefully. Decide which of the given conclusions is/are true based on the statements.

Statements:

$\alpha \leq \mu < \beta \leq \Omega, \beta > M = @$

Conclusions:

I. $\alpha < @$

II. $@ < \Omega$

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

Q110. Consider the given statement and decide which of the given assumptions is/are implicit in the statement.

Statement:

A cab can be booked by the customer using mobile apps.

Assumptions:

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I. Sales of luxury cars will increase substantially.

II. Customers will have to pay less.

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

Q111. Find the median of the numbers given below:

2, 7, 5, 6, 7, 5, 4, 4, 0, 3, 0, 3, 1, 1, 3

(a) 4.5
(b) 3.5
(c) 3
(d) 4

Q112. In India, when a President is to be impeached for violation of the Constitution, the charge is preferred by _____

(a) Union Council of Ministers
(b) only Lok Sabha
(c) either House of Parliament
(d) only Rajya Sabha

Q113. Eight students A, B, C, D, E, F, G and H are sitting around a circular table facing the centre, but not necessarily in the same order. B is sitting third to the right of A. H is sitting third to the left of A. C is sitting fourth to the right of B. B is sitting third to the left of G. F is the immediate neighbour of D. D is sitting second to the right of C.

Who is sitting second to the right of F?

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

Q114. The Gandhian Plan, 1944, espousing the spirit of the Gandhian Economic thinking, was formulated by _____.

(a) Sriman Narayan Agarwal
(b) Purushottam Das Tandon
(c) Lala Sri Rain
(d) MN Roy

Q115. In a certain code language, 'NOIDA' is written as *STNIF', and 'GOA' is written as 'LTF'. How will 'MEERUT' be written in that language?

(a) RJJWZY
(b) SJJVZY
(c) RJJWZZ
(d) WZYRJJ

Q116. A goods train overtakes two boys who are walking in the same direction in which the train is going, at a rate of 5 kmph and 10 kmph and passes them completely in 21 and 24 seconds respectively. What is the length of the goods train (in metres)?

(a) 2331/3
(b) 2602/3
(c) 180
(d) 210

Q117. The length of a rectangular plot is thrice its breadth. If the length of its diagonal is 18√10 cm, then the perimeter of the rectangle is:

(a) 108 cm
(b) 144 cm
(c) 72 cm

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(d) 100 cm

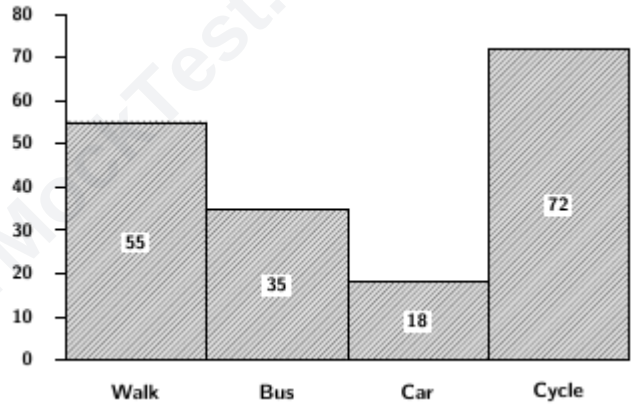
Q118. Swethi ranked 46^(th) from the top and 46^(th) from the bottom in her class. How many students are there in the class?

(a) 91
(b) 93
(c) 71
(d) 83

Q119. A well of radius 2 m is dug 16.8 m deep. The soil taken out of it is spread evenly all around the well to form a 48 cm high embankment. What is the width (in m) of the embankment?

(a) 8
(b) 10
(c) 9.6
(d) 8.4

Q120. The following graph shows the number of employees using different modes of transport to reach their workplace.



The number of employees who walked to work was approximately what percentage more than those who travelled by bus?

(a) 45%
(b) 57%
(c) 35%
(d) 18%

ANSWER KEY

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

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SOLUTIONS

Q1. Answer: (d) 25

Given:

SP of x items = CP of 32 items

Profit % = 28

Concept used:

SP = CP + CP × profit%

SP = selling price

CP = cost price

Calculation:

Let CP of each item be Rs. 100a

So, CP of x item = Rs. 100xa

SP of each item = 128xa

According to the question,

x.SP = 32.CP

=> 128ax = 3200a

=> x = 3200a/128a

=> x = 25

So, x = 25 items

Therefore The value of x is 25.

Q2. Answer: (d) imposition of upper limit of price on goods or services

The correct answer is imposition of upper limit of price on goods or services.

Key Points

• A price ceiling is a sort of price regulation that establishes the maximum price a seller may charge for a good or service and is typically imposed by the government.

• These are often imposed on necessities like food, gas, or medicine, frequently following a crisis or specific occurrence that causes prices to soar.

• The benefits of a price floor include maintaining affordable pricing, preventing price gouging, and growing demands.

• Price floor disadvantages include frequent supply shortages, the potential for quality loss and cost-cutting, as well as the possibility of additional fees or higher costs for other commodities.

Additional Information

• Price Floor:

• A price floor, which establishes a minimum cost for purchasing a good or service, is the opposite of a price ceiling.

• It stands for the lowest legal price at which a good or service may be offered and still adhere to the basic laws of supply and demand.

• This is also known as "price support."

• GST:

• An indirect tax on the provision of goods and services is known as the GST, or Goods and Services Tax.

• It is a multi-stage, destination-oriented tax imposed on every value addition, replacing multiple indirect taxes, including VAT, excise duty, service taxes, etc

Q3. Answer: (d) 56 KVA

The correct answer is 56 KVA.

Key Points

• The Indian Army has inaugurated the first green solar energy harnessing plant of 56 kVA using Vanadium-based battery technology in North Sikkim at an altitude of 16,000 ft.

• The project was completed in collaboration with IIT Mumbai.

• The project will immensely benefit troops in the forward areas and will be environment friendly.

• A team of eminent faculty from the Institute led by Prof Prakash Ghosh and troops of the Indian Army completed the project braving extreme climatic conditions.

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Additional Information

• Indian Army:

• Founded on 1 April 1895.

• Headquarters: New Delhi.

• Motto: Service Before Self.

• Army Day: 15 January.

• Commander in chief: President of India

Q4. Answer: (d) New Delhi

The correct answer is New Delhi.

Key Points

• The International Shooting Sport Federation (ISSF) oversees various non-Olympic shooting sport competitions in addition to the Olympic rifle, pistol, and shotgun categories.

• The International Shooting Union, which was founded in 1907, was renamed the ISSF in 1998.

• Vladimir Lisin, a Russian steel tycoon and the head of the European Shooting Federation, has held the ISSF Presidency since November 30, 2018.

• Munich, Germany serves as the ISSF's headquarter.

Q5. Answer: (d) None

Eight directors - Avan, Paul, Cameron, Dalton, Kovi, Rajamouli, Prabhu and Hund are sitting around a circular table facing the centre.

1. Dalton is third to the left of Hund.

2. Hund is fourth to the right of Kovi.

3. Paul is third to left of Dalton.

4. Avan is third to the left of Paul.

5. Rajamouli is second to the left of Cameron.

Only one person Prabhu is left and Prabhu will occupy the vacant position.

The final arrangement will be as shown below:

Clearly, no one sits between Avan and Prabhu, when counted from the left of Avan.

Hence, ‘none’ is the correct answer.

Q6. Answer: (b) 604

The logic followed here is:

• 5, 3 = 98 → $5^3 - 3^3 = 125 - 27 = 98$

• 7, 4 = 279 → $7^3 - 4^3 = 343 - 64 = 279$

Similarly,

• 9, 5 = ? → $9^3 - 5^3 = 729 - 125 = 604$

Hence, ‘604’ is the correct answer.

Q7. Answer: (b) 44^(th) Constitutional Amendment 1978

The correct answer is 44th Constitutional Amendment 1978.

Key Points

• The Constitution 44 Amendment Act of 1978 made the right to property no longer a fundamental right.

• Originally, one of the seven essential rights was the right to property, which stated that no one may be stripped of their property except by legal authority.

• After the 44th Amendment Act of 1978, the right to property as a Fundamental Right was replaced with a legal right under Article 300A of Part XII of the Constitution.

• This amendment was made because the government was unable to move on with public infrastructure projects and reforms

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because citizens began filing lawsuits to stop the acquisition of private property.

Therefore, the 44th Constitutional Amendment Act removed the Right to Property from the Fundamental Rights.

• The right of a citizen to own private property is a fundamental human right. It cannot be taken over by the state without following proper procedure and legal permission.

• The Court cited an earlier decision in the State of Haryana v. Mukesh Kumar case (2011) which concluded that the right to property is a human right as well as a constitutional or statutory one.

Additional Information

• The 42nd Amendment Act is also known as the Mini-Constitution because of the enormous number of revisions it has made to the Indian Constitution.

• It was enacted in 1976 during an Emergency period by Indira Gandhi Government.

• It was added Part IVA (Fundamental Duties) in the constitution.

• It was added there new words in the preamble (Socialist, Secular and Integrity).

• The 46th Amendment of the Constitution made it possible for the State to levy Sales Tax on the price of the goods and materials used in works contracts as if there was a sale of such goods and materials.

• The 48th Constitutional Amendment inserted a new provision in clause (5) of Article 356 of the Constitution in order to provide that in the case of the Proclamation issued by the President on 6 October 1983 with respect to the State of Punjab, Parliament may pass any resolution with respect to the continuance in force of the Proclamation for a period up to two years.

Q8. Answer: (d) Friday

A person says that the 26th day of a month is a Friday.

26 → Friday

Friday falls on these dates:

• 26 - 7 = 19

• 19 - 7 = 12

• 12 - 7 = 5

So, the 5th day of the month is Friday.

Hence, ‘Friday’ is the correct answer.

Q9. Answer: (b) Panchayats

The correct answer is Panchayats.

Key Points

• The Constitution (73rd Amendment) Act, 1992 has added a new Part IX consisting of 16 Articles and the Eleventh Schedule to the Constitution.

• The 73rd Amendment envisages the Gram Sabha as the foundation of the Panchayat Raj System to perform functions and powers entrusted to it by the State Legislatures.

• The amendment provides for a three-tier Panchayat Raj System at the village, intermediate and district levels.

• Articles 243A provides that the Gram Sabha may exercise such power and perform such functions at the village level as the Legislature of a state may by law provide.

• The eleventh scheduled of the constitution created by the 73rd Amendment contains 29 subjects on which the Panchayats shall have administrative Control, Articles 243H empowers State Legislature to make by law provision for imposing taxes etc. by the panchayat.

Thus, we can conclude that the 73rd Amendment of the Constitution of India, is related to Panchayats.

Q10. Answer: (b) 30°

Given:

$\sin\theta + (1/4)\ \text{cosec}\theta = 1$

Concept used:

$\text{cosec}\theta = 1/\sin\theta$

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

Calculation:

$\sin\theta + (1/4)\ \text{cosec}\theta = 1$

$\Rightarrow \sin\theta + (1/(4\times \sin\theta)) = 1$

$\Rightarrow \sin\theta + (1/4\sin\theta) = 1$

$\Rightarrow ((4\sin^2\theta+1)/4\sin\theta) = 1$

$\Rightarrow 4\sin^2\theta + 1 = 4\sin\theta$

=> 4sin2θ + 1 - 4sinθ = 0

=> $(2\sin\theta)^2 + 1^2 - 2 \times 2\sin\theta \times 1 = 0$

=> $(2\sin\theta - 1)^2 = 0$

=> 2sinθ - 1 = 0

=> 2sinθ = 1

=> sinθ = 1/2

=> sinθ = sin30°

So, θ = 30°

Therefore The value of θ is 30°.

Q11. Answer: (d) 143.95

Given:

a = 142.5

di = xi - a

∑fidi = 130.5

∑fi = 90

Concept used:

Arithmetic mean xi = [a + {(∑fidi)/∑fi}]

Here,

a = assumed mean

f_i = frequency of ith class

$d_i = x_i - a$ = deviation of ith class

Σfi = n = Total number of observations

x_i = class mark = (upper class limit + lower class limit)/2

Calculation:

Arithmetic mean xi = [142.5 + {(130.5)/90}]

=> 142.5 + 1.45

=> 143.95

Therefore The arithmetic mean of all the values of xi is 143.95.

Q12. Answer: (b) 98.6° F

The correct answer is 98.6° F.

Key Points

• All temperatures are related to each other by the following relationship –

(F - 32°)/9 = C/5 = (K - 273)/5

Calculation:

Given: Temperature = 37°C,

(F - 32°)/9 = C/5

(F - 32°)/9 = 37/5

5(F - 32°) = 333

So, the temperature is on the Fahrenheit scale: 98.6°F

Additional InformationCelsius scale:

• In this scale lower fixed point (ice point) is taken 0° and upper fixed point (steam point) is taken 100°.

• The temperature measured on this scale all in degree Celsius (°C).

Fahrenheit scale:

• This scale of temperature has lower fixed point (ice point) as 32° F and upper fixed point (steam point)as 212° F.

• The change in temperature of 1° F corresponds to a change of less than 1° on Celsius scale.

Kelvin scale:

• The Kelvin temperature scale is also known as thermodynamic scale. The triple point of water is also selected to be the zero of scale of temperature.

• The temperatures measured on this scale are in Kelvin (K).

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Q13. Answer: (a) Daniel Ricciardo

The correct answer is Daniel Ricciardo.

Key Points

• The Australian-Italian Daniel Ricciardo won the 2021 Formula One Italian Grand Prix at the Autodromo Nazionale Monza track in Italy.

• For McLaren, this marked their first victory in nine years.

• Valtteri Bottas finished third, followed by Lando Norris in second place.

• Lewis Hamilton and Max Verstappen collided and were eliminated from the Italian Grand Prix 2021.

Additional Information

• Pierre Gasly:

• French racing driver Pierre Gasly is presently driving for Scuderia AlphaTauri and competing in Formula One under the French flag.

• He won his maiden Formula One race at the Italian Grand Prix in 2020 while driving for AlphaTauri.

• Valtteri Bottas:

• Currently driving for Alfa Romeo in Formula One, Valtteri Bottas is a Finnish racing driver who previously competed for Mercedes from 2017 to 2021 and Williams from 2013 to 2016.

• Lando Norris:

• Racing under the British flag, Lando Norris is a Belgian-British driver who currently competes in Formula One with McLaren.

• The 2017 FIA Formula 3 European Championship was won by him.

Q14. Answer: (a) factors of production

The correct answer is factors of production.

Key Points

• The inputs utilized in the creation of goods or services to generate a profit are referred to as factors of production.

• These include all materials required for producing a good or service.

• Land, labor, capital, and entrepreneurship are the production factors.

• The overall factors of production can be impacted by the status of technical development, which can also account for any efficiencies not directly related to the four traditional components.

Additional Information

• Four factors of production—land, labor, capital, and entrepreneurship.

• Land:

• Every natural resource utilized to produce goods and services is included in land.

• Water, oil, copper, natural gas, coal, and forests are a few examples.

• The raw materials used in the industrial process are land resources. These resources can be both renewable and nonrenewable.

• Labor:

• The effort that people put forth to produce goods and services is referred to as labor.

• The income earned by labor resources is called wages and is the largest source of income for most people.

• Capital:

• Consider capital as the equipment, tools, and buildings that people utilize to produce commodities and services.

• Depending on the worker and the sort of job being done, capital varies.

• Interest is the source of income for owners of capital resources.

• Entrepreneurship:

• An entrepreneur is a person who uses capital, labor, and other production elements in combination to turn a profit.

• Profit is how entrepreneurship gets compensated.

Q15. Answer: (b) 1940

The correct answer is 1940.

Key Points

• The Muslim League advocated autonomy for the areas of the subcontinent with a majority of Muslims, which were the geographically adjacent territories in the North-West and the East, in its 1940 Resolution.

• These were to be "independent states," with full autonomy and sovereignty.

• However, at this time, neither the concept of a formal "Pakistan" nor the ambiguity of their decision spoke to any kind of separation.

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• It ultimately led to the partition of India in 1947 by the British Empire.

Additional Information

• All India Muslim League was founded in 1906 to safeguard the rights of Indian Muslims.

• Founders: Aga Khan III, Hakim Ajmal Khan, Khwaja Salimullah, Waqar-ul-Mulk

• Founded: 30 December 1906

Q16. Answer: (b) 3

According to the given information,

Clearly, there are 3 such letters, each of which is immediately preceded by a symbol and immediately followed by a number.

• Symbol → Letter → Number

(Left) yen 7 @ 2 W R Z % K 3 P 2 T ε J 1 B M 4 8 & yen E 5 D # 6 (Right)

For the following combinations, the condition is satisfied:

• [% K 3], [ε J 1], [yen E 5]

Hence, '3' is the correct answer.

Q17. Answer: (c) 15.2

Given:

If 12 is subtracted from each of n values x1, x2, ?, xn, then the sum of the resulting numbers is 92

If 8 is subtracted from each of the n values, then the sum of the numbers is 208

Formula Used:

Mean(Average) = Sum of observation/Number of observation.

Calculation:

Let the sum of n values x1, x2, x_(3 .....,)x_n= X

n be the number of observations.

According to the question,

X - 12n = 92 (12 is substracted n times = 12n) ----(1)

X - 8n = 208 (8 is substracted n times = 8n) ----(2)

Subtract (1) from (2)

=> 4n = 116

n = 29

Put the value of n in (2)

X - (8 × 29) = 208

=> 208 + 232

=> 440

X = 440

Mean of the given n values = Sum of observation/Number of observation

=> X/29

=> 440/29

=> 15.172 ~ 15.2

Therefore The mean of the given n values is 15.2.

Q18. Answer: (d) 1.70

Given:

2.06 - 3.16 + 4.59 - 1.79

Concept used:

Calculation:

2.06 - 3.16 + 4.59 - 1.79

=> 2.06 + 4.59 - 3.16 - 1.79

=> 6.65 - 4.95

=> 1.70

Therefore Required answer is 1.70.

Q19. Answer: (c) Brajawali

The correct answer is Brajawali.

Key Points

• Brajavali is the language used by Srimanta Sankardeva, Madhabdev and other composers who belonged to the religious sect started by Srimanta Sankardeva in the 15th-16th century in Assam.

• It was used by sankerdeva in his compositions like Borgeets, Bhaona and Ankia Naats.

• Assamese polymath Srimanta Sankardev was a significant person in the social and religious history of Assam, India, as well as a saint-scholar, poet, playwright, dancer, actor, musician, and artist.

Additional Information

• Malayalam:

• The Malayali people speak Malayalam, a Dravidian language, in the Indian state of Kerala and the union territories of Lakshadweep and Puducherry.

• In 2013, Malayalam received the designation "Classical Language of India."

• Sanskrit:

• The Rigveda, the first book in the world, was first written in Sanskrit, an ancient and classical language of India.

• It is a traditional language of South Asia and is a part of the Indo-Aryan group of Indo-European languages.

• Tamil:

• The Tamil people of the Indian subcontinent are native speakers of Tamil, a classical Dravidian language.

• The sovereign states of Singapore, Sri Lanka, and Tamil Nadu in India as well as the Indian Union Territory of Puducherry all have it as one of their official languages.

Q20. Answer: (b) Both I and II together are sufficient

Given:

I. Dheeraj at present is 35 years younger to his mother Parvati

II. Dheeraj's brother Shan, who was born in 1998, is 45 years younger to his mother Parvati.

Calculation:

I. Dheeraj at present is 35 years younger to his mother Parvati

With this statement alone we can't say anything about the born year of Dheeraj.

II. Dheeraj's brother Shan, who was born in 1998, is 45 years younger to his mother Parvati.

Born year of mother = 1998 – 45 = 1953

Now we got the year in which mother was born. So, from statement I

Born year of Dheeraj= 1953 + 35= 1988

Therefore Both statement I and II are required to give answer.

Q21. Answer: (a) 35.7 cm

Given:

Radius = 10 cm

Formula used:

Perimeter of quarter = Perimeter of a quadrant = 2r + πr/2

Here r = radius of the circle

Calculation:

Perimeter of the quarter = (2 × 10) + π × (10/2)

=> 20 + 3.14 × 5

=> 20 + 15.70

=> 35.7 cm

Therefore The perimeter of a quarter circle is 35.7 cm

Q22. Answer: (b) Madhya Pradesh

The correct answer is Madhya Pradesh.

Key Points

• A well-known traditional dance from Bundelkhand, rai dance, is performed by men in female disguise to the accompaniment of the dholak and nagara.

• Bediya tribes in Madhya Pradesh perform this folk dance.

• On the occasion of a child's birth in the Vaishya community, it is also performed by the women of the Ahir tribe.

Additional Information

• Some of the most important folk dances of Madhya Pradesh are:

• Karma:

• This indigenous folk dance belongs to the Gond and Oraon tribe of Madhya Pradesh.

• It is Considered as the oldest of all tribal dances in the state.

• It is performed on the onset of the spring season.

• Jawara:

• People of the Bundelkhand region perform this dance, to celebrate prosperity.

• Jawara follows the reaping of a good harvest.

• Lehangi:

• Lehangi is a popular folk dance of the Banjara and Kanjar tribe of the Bhopal commissary of Madhya Pradesh and is performed during the blossoming monsoon period.

• Ahiri Dance:

• Ahiri Dance is a trademark of the cattle herders of Gwalior.

• The communities of Gwalior who perform this dance, are considered to be the descendants of Lord Krishna.

• Baredi:

• Baredi is an important folk dance of the Gwalior district.

• Staring from Diwali, the dance is performed till the day of 'Karthik Purnima'.

• Important folk dances of some states:

State	Folk Dance
Manipur	Dol Cholam, Thang Ta, Lai Haraoba, Pung Cholom, Khamba Thaibi, Nupa Dance, Raslila, Khubak Ishei, Lhou Sha.
Karnataka	Yakshagan, Huttari, Suggi, Kunitha, Karga, Lambi.
Andhra Pradesh	Kuchipudi, Vilasini Natyam, Andhra Natyam, Bhamakalpam, Veeranatyam, Dappu, Tappeta Gullu, Lambadi, Dhimsa, Kolattam

Q23. Answer: (d) 26

Given:

17.821 + 178.21 - ? = 169.93

Concept used:

Calculation:

17.821 + 178.21 - ? = 169.93

=> 18 + 178 - ? = 170

=> 18 + 178 - 170 = ?

=> 196 - 170 = ?

=> 26 = ?

Therefore Required approximate value is 26.

Q24. Answer: (b) P

P, Q and R are standing in a queue one behind the other in increasing order of heights such that the shortest is at the front and the tallest at the back.

1. R is neither the first in the queue nor the tallest person.

< R <

2. P is NOT standing behind R.

__ < R < P

As P is not standing behind R, P is standing ahead of R and Q is standing behind R.

The final arrangement will be as shown below:

P < R < Q

Clearly, P is the shortest person among them.

Hence, ‘P’ is the correct answer.

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Q25. Answer: (c) VIHH

The logic followed here is:

According to the alphabetical positions of the letters,

• • Similarly,

• Hence, ‘VIHH’ is the correct answer.

Q26. Answer: (d) 7

The logic followed here is:

• 11, 8, 5, 2 = 3 → 11 - 8 = 5 - 2 = 3

• 19, 14, 9, 4 = 5 → 19 - 14 = 9 - 4 = 5

• 27, 20, 13, 6 = ? → 27 - 20 = 13 - 6 = 7

Hence, ‘7’ is the correct answer.

Q27. Answer: (b) 217

The pattern/logic followed here is:

$2^3 + 1 = 8 + 1 = 9$

23 - 1 = 8 - 1 = 7

33 + 1 = 27 + 1 = 28

33 - 1 = 27 - 1 = 26

43 + 1 = 64 + 1 = 65

43 - 1 = 64 - 1 = 63

53 + 1 = 125 + 1 = 126

53 - 1 = 125 - 1 = 124

63 + 1 = 216 + 1 = 217

Hence, ‘217’ is the correct answer.

Q28. Answer: (a) Tamil Nadu

The correct answer is Tamil Nadu.

Key Points

• Subramania Bharathi was a fiery poet and freedom warrior, and the Tamil Nadu government designated the anniversary of his passing as Mahakavi Day.

• The 11th of September is Subramania Bharati's death anniversary.

• The year 2021 marked the 100th death anniversary of the poet.

• Subramania Bharati's works ignited patriotism and left an indelible mark on Tamil literature.

Additional Information

• Bharati's poems and thoughts were included in the book "Manathil Urithi Vendum" (Firmness in Mind), which was published at a cost of Rs.10 crore and given to 37 lakh students.

• The poet's works are collected in a separate section called "Bharathiyal," copies of which are available at his memorials in Ettayapuram, Triplicane, the Anna Centenary Library in Chennai, and in Madurai.

• Bharathiyar was born in the Tuticorin area.

• Together with the World Tamil Associations, activities with the theme "parengum Bharati" (Bharati everywhere) were organized.

• Tamil Nadu :

• It is a south Indian state and is famous for its Dravidian-style hindu temples.

• Meenakshi Amman Temple in Madurai boasts tall, colorfully decorated structures known as "gopurams." Ramanathaswamy Temple is a holy place on Pamban Island. The colonial Fort St. George from 1644 is one of the highlights in the capital city of Chennai.

• The Chera, Chola, and Pandya clans of the Sangam era, the Pallava dynasty, and the subsequent Vijayanagara Empire were among the various regimes that ruled Tamil Nadu.

• Chief minister: M. K. Stalin

• Governor: R. N. Ravi

• Capital: Chennai

• Founded: August 15,1947

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Q29. Answer: (a) TRD

The logic followed here is:

According to the alphabetical positions of the letters,

• • Similarly,

• Hence, 'TRD' is the correct answer.

Q30. Answer: (b) Rs. 31,216

Shortcut Trick

For quarterly compounding, the Rate becomes 16% ÷ 4 = 4% and Time becomes 9 ÷ 3 = 3 periods.

Use the 3 : 3 : 1 ratio method for 3 periods at 4%:

Step 1: 4% of 2,50,000 = 10,000 | Step 2: 4% of 10,000 = 400 | Step 3: 4% of 400 = 16

Compound Interest = 3 × (10,000) + 3 × (400) + 1 × (16) = 30,000 + 1,200 + 16 = 31,216.

Therefore The correct answer is Rs. 31,216.

Alternate Method

Given:

=> Principal (P) = Rs. 2,50,000

=> Annual Rate (R) = 16%

=> Time (T) = 9 months

Formula Used:

=> Amount (A) = $P(1 + r/100)^n$, where r is the quarterly rate and n is the number of quarters.

=> Compound Interest (CI) = Amount − Principal

Calculations:

=> Quarterly Rate (r) = 16% ÷ 4 = 4%

=> Number of quarters (n) = 9 months ÷ 3 months = 3 quarters

=> $A = 2,50,000 \times (1 + 4/100)^3$

=> $A = 2,50,000 \times (1.04)^3$

=> $A = 2,50,000 \times 1.124864$

=> A = 281,216

=> CI = 281,216 − 2,50,000

=> CI = 31,216

Therefore The correct answer is Rs. 31,216.

Additional Information

Quarterly Compounding Rule

When interest is compounded quarterly, divide the annual rate by 4 and multiply the time in years by 4. Formula: A = P(1 + R/400)^(4n).

Half-Yearly Compounding Rule

When interest is compounded half-yearly, divide the annual rate by 2 and multiply the time in years by 2. Formula: $A = P(1 + R/200)^{2n}$.

Effective Interest Rate

It represents the actual interest earned in a year due to compounding. Effective Rate = $(1 + r/n)^n - 1$, where r is the nominal rate and n is the frequency.

CI − SI Difference for 3 Years

The difference between compound interest and simple interest for 3 years is given by: $D = P(r/100)^2 \times (3 + r/100)$.

Q31. Answer: (a) Detached building

The correct answer is detached building.

Key Points

• A detached building is one that has walls and a roof that are separate from other structures and that has open space on all sides.

• It means any building which is not physically connected to the dwelling.

Additional Information

• Semi-detached building:

• A semi-detached building is a single-family duplex home that has a common wall with the home next door.

• Construction of semi-detached homes is done in pairs, with the layout of each home being a mirror replica of the other.

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• Special building:

• A special building is any structure with a built-up area greater than 500 square meters that is used for assembly, industrial, wholesale enterprises, hotels, hostels, hazardous, mixed-use, or any of the aforementioned occupancies.

• High rise building:

• High-rise buildings, or high-rises, are multistory structures that are tall enough to call for the usage of an elevator or other mechanical system for vertical motion.

Q32. Answer: (b) East

A working clock is placed on a table in such a manner that at 9.00 p.m the hour hand is pointing towards the north.

If the same clock remains in the same position.

The minute hand will point in East direction at 6.00 am.

Hence, 'East' is the correct answer.

Q33. Answer: (b) (√5)/3

Given:

√(√1875/√3888 × √768/√1200)

Calculation:

√(√1875/√3888 × √768/√1200)

=> √(√3×625/√3×1296 × (√(256 ×3))/(√(3 × 400)))

=> √(25√3/36√3 × 16√3/20√3)

=> √(25√3/36√3 × 16√3/20√3)

=> √(25/36 × 4/5)

=> √(5/9)

=> (√5)/3

Therefore Required answer is (√5)/3.

Q34. Answer: (a) Mandalas

The correct answer is Mandalas.

Key Points

• RigVeda:

• The oldest religious text in the world.

• It is the collection of hymns, composed around 1700 BC, contains 1,028 hymns, and is divided into 10 mandalas.

• The third mandala contains the Gayatri Mantra.

• Saraswati is the deity river in Rigveda.

• 8th Mandala is ascribed to Kanvas and Angiras.

• 9th Mandala is the compilation of soma hymns.

• The 10th Mandala of Rigveda contains the Purushasukta hymn which tells about the origin of the caste system.

• The Rigvedic society comprised four varnas, namely Brahmana, Kshatriya, Vaishya, and Shudra.

• Slavery was mentioned in Rigveda.

• It was mentioned in the term Dasa.

• Three to four verses of Rigveda mentions Dasas.

• Sabha the assembly was mentioned in Rigveda.

• The term Sabha means both the assembly and the assembly hall.

• Rajan word was used for Kings (Raja).

• It occurs many times in Rigveda.

Additional Information

• Vedas are supposed to be the first religious text of the Hindu religion.

• Veda means knowledge.

• There are four Vedas namely:

• Rig Veda - Oldest and most important Veda, contains the knowledge of chemistry and medical science.

• Yajur Veda - Only Veda, which is divided into two parts (i.e. Krishna Yajur Veda and Shukla Yajur Veda), contains the knowledge of all sacrificial formulas and weapons.

• Sam Veda - It is the Origin of Indian classical music.

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• Atharva Veda - It contains the knowledge of Ayurveda, also charms and spells hence it is known as black Veda.

Q35. Answer: (a) Mass wasting

The correct answer is Mass wasting.

Key Points

• Mass wasting is the enormous downward movement of rock, soil, and debris caused by gravity. Mass wasting includes events like debris flows, slumps, and rock falls.

• Rocks fall:

• Rock falls happen when chunks of rock fall down a cliff. Large bricks may eventually get loosened as a result of frost wedging, falling.

• Talus is the term for the buildup of rock fragments at the bottom of a steep slope.

• Slump:

• The term "slump" refers to the rotating slip of a large amount of bed rock off a high cliff. The most frequent cause of slumping is erosion at the slope's base, which lessens the support provided for underlying sediments.

• Debris avalanche:

• The debris avalanche is the worst kind of debris flow. It flows down steep slopes in a quickly churning mass of dirt, water, rock debris, and air. By serving as a cushion between the debris and the underlying surface, the trapped air may quicken the avalanche.

Additional Information

• Mass wasting also includes rockslides, landslides, mudflow, creep etc.

• Rockslides: Typically, a zone of weakness is followed by a rockslide. Slippage is exacerbated by water presence. Rockslides typically originate from collisions down the slope shattering the boulder mass into debris.

• Landslides: Large rocks that break off and roll downhill cause landslides. Both really heavy rain and earthquakes frequently start it.

• Mudflow: A mudflow is a swiftly moving liquid mass made up of soil, rock fragments, and water. They are especially frequent in semiarid highland areas.

• Creep: Creep is the gradual and slow descent of soil. Usually, its velocity is less than one centimeter each year. The gradual movement of soil particles down the hill caused by freezing and thawing contributes to soil creep.

• Hydraulic action:

• The physical weathering and mechanical reaction of earth elements to flowing water in rivers and streams, breaking waves, and storm surge along shorelines is referred to as hydraulic action.

• Solifluction:

• It a combination of creep and flow, creates distinct sheets, terraces, and lobes of rock and debris.

• On steeper slopes where the process has pushed loosening boulders and dirt downslope, solifluction sheets and lobes can be seen.

Q36. Answer: (a) 110 ml

Given:

Total quantity of the initial mixture = 90 ml

Sugar percentage = 38%

Sugar percentage of the new mixture = 17.1%

Calculation:

In the mixture of 90 ml amount of sugar = 90 × 38%

=> 34.2 ml

Now, % of the sugar in the new mixture becomes 17.1

According to the question,

In the new mixture 34.2 ml of sugar = 17.1% of the mixture [Because We added water so amount of sugar will unchanged]

So, 17.1% = 34.2

=> 1% = 2

=> 100% = 200

So, total quantity of new mixture = 200 ml

Water added = 200 - 90

=> 110 ml

Therefore Required amount of water to be added is 110 ml.

Q37. Answer: (d) Jyotirao Goviudrao Phule

The correct answer is Jyotirao Goviudrao Phule.

Key Points

• Jyotirao Goviudrao Phule, a member of the Mali caste of farmers and gardeners, was born on April 11, 1827, in Maharashtra.

• In order to provide equitable social and economic benefits for the lower castes in Maharashtra, he established Satyashodhak Samaj, which translates to "Seekers of Truth," in 1873.

• He rose up against the Brahmins' rule and fought for the rights of peasants and other members of the lower castes.

• Jyotiba founded a girls' school in 1851 and invited his wife to teach the students there.

• The Phules founded three schools by 1852, but by 1858, all of them had closed due to a lack of funding in the wake of the Revolt of 1857.

• He built a common bathing tank outside his home in 1868 to demonstrate his inclusive attitude toward all people and his desire to eat with anyone, regardless of caste.

• On May 11th, 1888, Maharashtrian social leader Vithalrao Krishnaji Vandekar bestowed upon him the title of "Mahatma".

Additional Information

• Savitri Bai Phule:

• Savitri Bai Phule was a Maharashtrian poet, educator, and social reformer.

• She is credited with founding the feminist movement in India.

• In Pune, near Bhide Wada, Savitribai and her husband established one of the first modern Indian girls' schools in 1848.

• EV Ramasamy Naicker:

• An Indian politician and social activist named EV Ramasamy Naicker founded the Dravidar Kazhagam and the Self-Respect Movement.

• As the "Father of the Dravidian movement," he is well-known.

• In Tamil Nadu, he battled against caste and gender discrimination as well as Brahminical dominance.

• Ayyankali:

• As a well-known social reformer, educator, economist, lawmaker, and revolutionary, Ayyankali also served in government.

• In the princely realm of Travancore, he campaigned for the development and growth of the oppressed people.

Q38. Answer: (b) 41/6%

Given:

A = 140% of B

Calculation:

Let B be 100x

So, A = 100 × 140%

=> 140x

Now,

After A is decreased:

A = 140x - 140x × 20%

=> 112x

After B is increased:

B = 100x + 100x × 38%

=> 138x

Previous total of A and B = 140x + 100x = 240x

New total of A and B = 112x + 138x = 250x

Increase in total = 250x - 240x = 10x

Percentage change = (10x/240x) × 100

=> 25/6

=> 41/6

So, change in total = 41/6 %

Therefore The percentage increase in the total value of A and B is 41/6 %.

Q39. Answer: (b) 1848

Given:

The ratio of radius and height of the cylinder = 3: 2

Volume = 19404 cm^3

Formula used:

The curved surface area of the cylinder = $2\pi rh$

Volume of cylinder = $\pi r^2 h$

Here,

r = radius

h = height

Calculation:

Let the radius of the base and height of the cylinder be 3x and 2x

So,

$\pi \times (3x)^2 \times 2x = 19404$

$\Rightarrow 9x^2 \times 2x = 19404 \times (7/22)$

$\Rightarrow 18x3 = 6174$

$\Rightarrow x^3 = 6174/18$

$\Rightarrow x3 = 343$

$\Rightarrow x = 7$

So, radius = 7 × 3 = 21 cm, and height = 7 × 2 = 14 cm

Now,

Curved surface area = $2\pi \times 21 \times 14$

$\Rightarrow 2 \times (22/7) \times 21 \times 14$

$\Rightarrow 2 \times 22 \times 21 \times 2$

$\Rightarrow 1848$

Therefore The curved surface area (in cm2) of the cylinder is 1848.

Q40. Answer: (b) 1 and 1.3

Given:

$36 \div (8 \times 3) - [3 \div \{4 \times \{3 \times 4 \div (5 - 9) + 6\}\}]$

Concept used:

Calculation:

$36 \div (8 \times 3) - [3 \div \{4 \times \{3 \times 4 \div (5 - 9) + 6\}\}]$

$\Rightarrow 36 \div 24 - [3 \div \{4 \times \{3 \times 4 \div (- 4) + 6\}\}]$

$\Rightarrow 36 \div 24 - [3 \div \{4 \times \{3 \times (- 4/4) + 6\}\}]$

$\Rightarrow 36 \div 24 - [3 \div \{4 \times \{3 \times (- 1) + 6\}\}]$

$\Rightarrow 36 \div 24 - [3 \div \{4 \times \{- 3 + 6\}\}]$

$\Rightarrow 36 \div 24 - [3 \div \{4 \times 3\}]$

$\Rightarrow 36 \div 24 - [3 \div 12]$

$\Rightarrow 36 \div 24 - (1/4)$

$\Rightarrow 3/2 - 1/4$

$\Rightarrow (6 - 1)/4$

$\Rightarrow 5/4$

$\Rightarrow 1.25$

So, this is lies in between 1 and 1.3

Therefore Required answer is Option 2.

Q41. Answer: (c) Andhra Pradesh

The correct answer is Andhra Pradesh.

Key Points

• On June 2, 2014, Telangana became a state in its official capacity.

• The Congress Working Committee overwhelmingly approved a resolution on the creation of a separate Telangana state on July 1, 2013.

• The Bill was introduced to Parliament in February 2014 after going through several phases.

• In February 2014, Andhra Pradesh Reorganisation Act, 2014 Bill was passed by the Parliament for the formation of Telangana State.

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• On March 1, 2014, the measure was approved by the President and published in the gazette.
• KCR, Kalvakuntla Chandrashekar Rao was chosen to serve as Telangana's first chief minister.

Additional Information

• Telangana
• Governor: Sri Jishnu Dev Varma
• Chief minister: Sri Anumula Revanth Reddy
• Capital: Hyderabad
• Founded: 2 June 2014

Q42. Answer: (a) CI

The logic followed here is:

According to the alphabetical positions of the letters,

• • Similarly,
• Hence, 'CI' is the correct answer.

Q43. Answer: (d) 4√3

Given:

(x + 1) : (x + 5) :: (x + 17) : (x + 53)

Concept used:

Mean proportion of two numbers x and y = √(x × y)

Calculation:

Here,

(x + 1)/(x + 5) = (x + 17)/(x + 53)

=> $x^2 + 53x + x + 53 = x^2 + 17x + 5x + 85$

=> x2 + 53x + x - x2 - 17x - 5x = 85 - 53

=> 32x = 32

=> x = 32/32

=> x = 1

Now,

(x + 5) and (9x – 1) = (1 + 5), (9 × 1 - 1)

=> 6, 8

Now,

mean proportion = √(6 × 8)

=> √48

=> 4√3

Therefore Required mean proportion is 4√3.

Q44. Answer: (b) IIT - Hyderabad

The correct answer is IIT - Hyderabad.

Key Points

• IIT Hyderabad has inaugurated India's first building made of bio-bricks from agro-waste.
• The institute will submit a proposal to the Ministry of Agriculture to promote its wider adoption by the rural community.
• Researchers at the IIT demonstrated that agricultural waste can be converted into sustainable materials which, in turn, can be used to build eco-friendly, cost-effective structures.

Important Points

• According to the researchers, the material exhibits excellent thermal insulation and fire-retardant properties.
• When used in roofing and wall panelling, it can effectively reduce heat gain by 5 – 6 degrees.

Q45. Answer: (d) 1991

The correct answer is 1991.

Key Points

• On 24th July, 1991, in Lok-Sabha the Minister of States for industries, Mr. P. J. Kurian declared the Industrial Policy, 1991.
• The new policy contained policy directions for reforms and thus for LPG (Liberalisation, Privatisation and Globalisation).

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• With the exception of three industrial sectors, it expanded the scope of private sector involvement.

• The strategy has simultaneously welcomed foreign technology and investment.

• This has ended the era of license raj or red tapism in the country.

Additional Information

• Salient features of new industry policy 1991:

• Liberalized Industrial Licensing Policy:

• With the exception of 18 industries, licensing system has been removed for all other industries.

• Some of those 18 industries, where the licensing system is still mandatory are; Army and Defense, Forest Conservation, Industries engaged in manufacturing goods which are harmful to the Environment and industries, which are manufacturing luxury goods, for the affluent (very rich) class, etc.

• Localization Policy:

• Those industries which are situated in cities, where the population is less than 1 million, industrial permission from the government, to start any industry is not required.

• In cities having population of more than 1 million, with the exception of electronics and other pollution free industries, all industrial units may be 25 kilo meters away from the city's boundary.

• Foreign Investment:

• Provision has been made to invest up to 51 percent by foreign investors in the equity shares of Indian Companies. Earlier, this limit was limited up to 40% only.

• Role of Public Sector:

• Those public sector undertakings which are not doing well at present, but in which there are enough chances of improvement, shall be re-constituted.

• Change in the MRTP Act:

• Companies having investment of Rs. 100 crores, will not be required to take prior Government permission, for opening new subdivisions, or to expand the present industry or for amalgamation of companies.

Q46. Answer: (b) Rs. 6897

Given:

Sum = Rs. 5700

Rate = 10%

Time = 2 years

Concept used:

A = P(1 + r/100)^t

Here,

A = Amount

P = Principal or sum

r = Rate

t = time

Calculation:

$A = 5700(1 + 10/100)^2$

$\Rightarrow A = 5700(1 + 1/10)^2$

$\Rightarrow A = 5700(11/10)2$

$\Rightarrow A = 5700 \times 121/100$

$\Rightarrow A = 6897$

So, amount = Rs. 6897

Therefore The total amount payable on maturity would be Rs. 6897.

Q47. Answer: (c) India

The correct answer is India.

Key Points

• With 22% of worldwide milk output, India is the world's top producer.

• The United States, China, Pakistan, and Brazil are next.

• The majority of the development in milk production during the 1970s has occurred in South Asia, which is the primary engine of milk production growth in the developing world.

• New Zealand, the United States of America, Germany, France, Australia, and Ireland have the highest milk surpluses.

• The nations with the greatest milk deficits are China, Italy, the Russian Federation, Mexico, Algeria, and Indonesia.

Additional Information

• Uttar Pradesh is the top milk-producing state in India, contributing 17% of the nation's total production.

• Uttar Pradesh has the highest buffalo population in the country and the second highest cattle population.

• The majority of rural population in the state is engaged in livestock and dairying.

• Number two and third place are held by Rajasthan (11.5%) and Andhra Pradesh (9%) respectively, in milk production.

Q48. Answer: (c) Memory access time

The correct answer is Memory access time.

Key Points

• The amount of time it takes to move a character from or to the CPU from RAM is known as the memory access time.

• Access times for quick RAM chips are 10 nanoseconds (ns) or less.

• The memory hierarchy's design, the size of the blocks at each level, the management rules selected for each level, and the amount of time required to access data at each level all affect how quickly data can be accessed from memory.

Additional Information

• Instruction cycle:

• The central processing unit runs through an instruction cycle from the time the computer boots up until it shuts down in order to process instructions.

• The fetch stage, the decode stage, and the execute stage are the three primary stages that make up this process.

• CPU frequency:

• Clock rate, PC frequency, and CPU frequency are other terms for clock speed.

• This is measured in gigahertz, sometimes known as GHz, which stands for billions of pulses per second.

• How quickly a CPU can process data and how well a PC performs are both determined by its clock speed (move individual bits).

• Memory formatting time:

• All of the data on the memory card is permanently deleted during formatting.

• Quick format could take up to 2 minutes, depending on the size of the card. In the absence of Quick format, the procedure requires more time.

Q49. Answer: (b) 240

Given:

The ratio of numbers = 11 : 4

HCF of the numbers = 16

Concept used:

The largest number that divides two or more numbers is the highest common factor (HCF) for those numbers.

Calculation:

Let two numbers be 11a and 4a

According to the concept of HCF,

HCF of 11a and 4a = a

According to the question,

a = 16

So, the numbers are 11 × 16 = 176, and 4 × 16 = 64

Sum of the numbers = 176 + 64

=> 240

Therefore The sum of these two numbers is 240.

Q50. Answer: (d) bit

The code for the word beautiful is:

Hence, ‘bit’ is the correct answer.

Q51. Answer: (b) Pangaea

The correct answer is Pangaea.

Key Points

• According to The Continental Drift Theory, all the continents formed a single continental mass named Pangaea.

• Laurasia is the northern supercontinent that was formed as part of the split of the Pangaean supercontinent during the late

Mesozoic era.

• Gondwana was a supercontinent which existed from the Neoproterozoic until the Carboniferous. It broke into Antarctica, South America, Africa, Madagascar, Australia-New Guinea and New Zealand.

• Panthalassa was a superocean which surrounded the supercontinent Pangaea.

• The supercontinent, Pangaea, began to split around 200 million years ago according to Wegner.

Q52. Answer: (d) 30

Given:

Each interior angle of a polygon = 168°

Concept used:

Number of side (n) = 360°/θ

Interior angle + exterior angle = 180°

Here, θ = each exterior angle of the polygon

Calculation:

Each exterior angle = 180° - 168°

=> 12°

Let the number of sides be n

So, n = 360°/12°

=> n = 30

So, the number of sides of the polygon = 30

Therefore This polygon has 30 sides.

Q53. Answer: (d) 1969

The correct answer is 1969.

Key Points

• MRTP Act was passed in 1969 and became effective from 1970.

• MRTP stands for Monopolies and Restrictive Trade Practices.

• 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.

Q54. Answer: (c) 1 - c, 2 - a, 3 - d, 4 - b

The correct answer is 1 - c, 2 - a, 3 - d, 4 - b.

Key Points

• Puthandu:

• It is also known as Puthuvarusham.

• Puthandu is observed by Tamils as the traditional "Tamil/Hindu New Year."

• It normally occurs on April 14 and this month is known as Chittirai, the first month of the Tamil solar calendar.

• Poila Boisakh:

• The first day of the first month of Baishakh in the Bengali solar calendar is known as Pohela Boishakh.

• It is also known as the Bengali New Year or Nobo Borso.

• It is widely observed in Bangladesh and West Bengal.

• Vishu:

• Due to Malyalam being the dominant language in Kerala, Vishu is sometimes referred to as the Malyalam New Year.

• For residents of Kerala and several nearby regions of Tamil Nadu, Vishu signifies the start of the new year.

• Gudi Padwa:

• Celebrated on the first day of Chaitra month, Gudi Padwa is a New Year day for Maharashtrians and Konkanis.

• On this day a gudi can be found hanging out on the right side of the main access of the houses.

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Q55. Answer: (c) 120

Given:

x4 - 6x2 - 1 = 0

Concept used:

If a - (1/a) = t

So,

$a^2 + (1/a)^2 = t^2 + 2$

$a^3 - (1/a)3 = t^3 + 3(t)$

Calculation:

x4 - 6x2 - 1 = 0

=> x^2 - 6 - 1/x2 = 0 [Dividing both side by x2]

=> x2 - 1/x2 = 6

Now,

(x6 - x-6) - 3 (x4 + x-4) = {x6 - (1/x)^6} - 3{x4 + (1/x)4}

=> {$(x^2)3$ - $(1/x^2)^3$} - 3{$(x^2)^2$ + (1/x2)2}

=> {6^3 + 3(6)} - 3{6^2 + 2}

=> {216 + 18} - 3{36 + 2}

=> 234 - 3 × 38

=> 234 - 114

=> 120

Therefore Required answer is 120.

Q56. Answer: (d) 4

Pairs of letters in the word UNIVERSAL (in both forward and backward directions) each of which has as many letters between them in the word as there are in English alphabetical order are:

There have four pairs. They are

• NR

• NS

• RS

• SV

Hence, ‘4’ is the correct answer.

Q57. Answer: (b) The story of the love of Pururavas and Urvasi

The correct answer is The story of the love of Pururavas and Urvasi.

Key Points

• Vikramorvasiyam is a five-act Sanskrit drama, which translates as "Urvasi Won by Valour".

• In the fourth or fifth century CE, the ancient Indian poet Kalidasa penned it.

• It is based on the Vedic love story of King Pururavas and an Apsara named Urvasi, who is noted for her beauty.

• The second of Kalidasa's three plays is Vikramorvasiyam; the other two are the well-known Abhijnanasakuntalam and Malavikagnimitram.

• Classical Sanskrit author Kalidasa is frequently recognized as the greatest poet and playwright of ancient India.

• The Vedas, the Ramayana, the Mahbarata, and the Puranas are the main sources for his plays and poems.

Additional Information

• Malavikagnimitram:

• In this drama, Sunga King Agnimitra of Vidisha falls in love with Malavika, the stunning banished handmaiden of his chief queen Dharini in the palace.

• In the fifth century CE, Kalidasa penned this drama in five acts.

• Abhijnanasakuntalam:

• A wonderful love story between Dushyanta and Shakuntala is told in the book Abhijnanasakuntalam.

• It was written by Kalidasa, one of India's greatest poets.

• The story of Nal and Damayanti:

• The complicated legendary love story of Nala and Damayanti exists before the Mahabharata epic.

• The sage Vrihadaswa describes the tale in the Vana Parva (Book of the Forest).

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Q58. Answer: (a) Tamil Nadu Women in Agriculture

The correct answer is Tamil Nadu Women in Agriculture.

Key Points

• Tamil Nadu Women in Agriculture (TANWA) is a project initiated in Tamil Nadu to train women in the latest agricultural techniques.

• It induces women to actively participate in raising agricultural productivity and family income.

• In the late 80s, a number of women agricultural officers were roped in to take the benefits of natural farming far and wide in Tamil Nadu, apart from Odisha and Madhya Pradesh.

• The skills taught under TANWA include increasing fertilizer use efficiency, organic manure conservation Farm Yard Manure (FYM), compost-enriched, use of biofertilizer, tree cropping, field identification of pest/diseases, seed treatment, rat control, and grain storage.

• With the accumulated savings, they promote small-scale household activities like mushroom cultivation, soap manufacture, doll making, or other income-generating activities.

Q59. Answer: (b) 1.0

Given:

$(5.2 \times 5.2 - 2.7 \times 2.7)/(7.9 \times 2.5) = ?$

Formula used:

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

Calculation:

$(5.2^2 - 2.7^2)/(7.9 \times 2.5)$

$\Rightarrow (5.2 - 2.7)(5.2 + 2.7)/(7.9 \times 2.5)$

$\Rightarrow (2.5)(7.9)/(7.9 \times 2.5)$

$\Rightarrow 1$

Therefore $(5.2 \times 5.2 - 2.7 \times 2.7)/(7.9 \times 2.5) = 1$

Q60. Answer: (a) 10:00 pm

Given:

The elephant show runs = 80 m

The lion show runs = 120 m

Both start at 6 pm for the 1st time

Concept used:

For this type of question,

Time of 2nd time commencing = Time at 1st time commence + LCM of time taken by each

Calculation:

LCM of 80 and 120 = 240

So, 240 minutes = 240/60 = 4 hours

So, Both will again start at 6 + 4 = 10 pm

Therefore Both shows will start again at 10 pm.

Q61. Answer: (b) West Bengal

The correct answer is West Bengal.

Key Points

• Poush Sankranti or Poush Parbon, a well-known event, is widely observed in West Bengal.

• In Bengal, Poush Sankranti is a lucky day when farmers begin harvesting their crops.

• Rice grains are used in Lakshmi Puja rituals as a symbol of the goddess of wealth.

• The holiday is also known as pithe parbon, and the most popular delicacy for celebration is called pithe made from rice flowers.

• West Bengal

• Chief minister: Mamata Banerjee

• Capital: Kolkata

Additional Information

• Maharashtra:

• Makar Sankranti is observed as Maghi Sankrant or Haldi Kumkum in Maharashtra and Goa.

• Himachal Pradesh:

• Locals in Himachal Pradesh observe Magha Saaji as Makar Sankranti.
• Sankranti is known locally as Saaji, and the month is called Magha.
• People visit the temples on this day to seek the Lord's blessings and take a plunge in the area's sacred rivers.
• Rajasthan:
• "Makar Sankrati" is also known as "Sakraat" in the Rajasthan.
• It is specifically observed in Jaipur as a kite-flying competition amongst several groups.
• Rajasthani specialties and sweets including pheeni, til-patti, gajak, kheer, ghevar, pakodi, puwa, and til-laddoo are served to mark the day.

Q62. Answer: (c) a and c

The correct answer is a and c.

Key Points

• Spirulina
• Spirulina is a unicellular Blue-Green Algae.
• It is an edible Blue Green Algae because it has large amount of proteins present.
• It can be grown artificially in water tanks.
• It is fodder for cattle.
• Chlorella
• Chlorella (green algae) is known as the Space algae and is used in space research.
• It serves as a good source of food for humans in space as it contains a high level of iron, vitamins and amino acids.
• It grows easily in the presence of sunlight, minerals and water and using hydroponics.

Additional Information

• Spirogyra
• Spirogyra is a kind of Algae.
• It is a large genus (about 400 species) of freshwater green algae found in shallow ponds, ditches and amongst the vegetation of large lakes.
• It does not form any gametes and reproduction takes place entirely within the algae.
• It often grows in short-lived ponds that build up during wet weather and dry up subsequently.
• Funaria
• Funaria belongs to the group Bryophyta.
• They don't have a vascular system.
• Funaria fertilisation is dependent on water for the transfer of sperm to the egg.
• The main plant body is a gametophyte which is independent and the sporophyte is partially or fully dependent on gametophytic generation.
• Funaria is a type of Moss commonly called Rope moss or Cord moss.

Q63. Answer: (d) Aravalli

The correct answer is Aravalli.

Key Points

• Aravalli is the oldest mountain range in the Indian subcontinent.
• The Aravali Hills lies on the western and northwestern margins of the peninsular plateau.
• Mount Abu is the famous hill station located in the Aravalli range.
• Dilwara temple is the famous Jain pilgrim center at the Aravalli range.
• Ajmer is a famous town located in the valley of Aravalli.
• The Haldighat pass is located in the Aravalli range.
• Mount Gurusikhar is the highest peak in the Aravalli range

Additional Information

• Vindhya Range is the oldest mountain range of Madhya Pradesh.
• Kaimur hills are the easternmost hill of the Vindhya Range.
• Kakrabardi hills are the westernmost hill of the Vindhya Range.
• Satpura is the mountain located parallel to Vindhya.
• Satpura is a series of seven mountains.
• The highest peak in the Satpura range is Dhupgarh.

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• The Maikal Hills is a mountain range in the state of Chhattisgarh, India.

• The Maikal Hills are located in the eastern part of Satpuras, in the Kawardha district of Chhattisgarh, overlooking the scenic town of Kawardha.

Q64. Answer: (b) 5

Shortcut Trick

When two objects move in the opposite direction, their relative speed is the sum of their individual speeds.

Relative Speed = 145 + 17 = 162 km/hr.

Convert to m/s: 162 × (5/18) = 45 m/s.

Time = Train Length ÷ Relative Speed = 225 ÷ 45 = 5 sec.

Therefore The correct answer is 5 sec.

Alternate Method

Given:

Length of the Train = 225 m

Speed of the Train (V_T) = 145 km/hr

Speed of the Man (V_M) = 17 km/hr

Formula Used:

Time = Distance ÷ Relative Speed

Relative Speed (Opposite Direction) = V1 + V2

Calculations:

=> Relative Speed = 145 + 17 = 162 km/hr

=> To convert km/hr to m/s, multiply by 5/18

=> Relative Speed = 162 × (5/18) m/s

=> Relative Speed = 9 × 5 = 45 m/s

=> Time taken to pass = Distance ÷ Relative Speed

=> Time = 225 ÷ 45

=> Time = 5 seconds

Therefore The correct answer is 5 sec.

Additional Information

Relative Speed Concept

When two objects move in the same direction, relative speed = |V1 − V2|. When moving in opposite directions, relative speed = V1 + V2.

Unit Conversion

To convert km/hr to m/s, multiply the value by 5/18. To convert m/s to km/hr, multiply the value by 18/5.

Crossing Objects

When a train crosses a stationary man or pole, the distance covered is the length of the train itself. If crossing a platform, distance = Length of Train + Length of Platform.

Q65. Answer: (a) 73

The correct answer is 73.

Key Points

• Part IX to the Indian Constitution

• The idea of the Panchayati Raj system in India signifies the system of rural local self-government.

• The 73rd amendment act added a new part IX and article 243 to 243 O to the Indian constitution.

• The 73rd amendment act of the Indian constitution gave constitutional status to the Panchayati raj system.

• The term Panchayati raj was coined by Jawahar Lal Nehru.

• The Panchayati Raj Act came into force on 24th April 1993.

• April 24th is observed as the national Panchayati raj day since 2011.

• Important committees constituted for recommendations regarding Panchayati raj in India:

• Balwant Rai Mehta committee.

• V.T. Krishnammachari committee.

• Ashok Mehta Committee.

• G.V.K. Rao Committee.

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• L.M. Singhvi Committee.

• P.K. Thungon Committee.

Additional InformationSome important amendment

75	**The 75th Constitutional Amendment act (1994) provides for setting up of State-level Rent Tribunals to exclude the jurisdiction of all courts, except that of the Supreme Court, under Article 136 of the Constitution.**
67	The Constitution (67th) Act, 1990 Amendment of Article 356. In Article 356 of the Constitution, in clause (4), in the third proviso for the words "three years and six months", the words "four years" shall be substituted.
69	The 69th Amendment Constitutional Amendment Act of 1991 designated the Union Territory of Delhi as the National Capital Territory of Delhi.

Q66. Answer: (b) Haldia

The correct answer is Haldia.

Key Points

• The National Waterway 1 connect Haldia - Allahabad.

• On Ganga-Bhagirathi-Hooghly River System

• Length:1620

• Passing Through: Uttar Pradesh, Bihar, Jharkhand & West Bengal

• In 1986 the Government of India created the Inland Waterways Authority of India (IWAI) for regulation and development of Inland Waterways for Navigation and shipping.

• The headquarters of IWAI is located in, Noida Uttar Pradesh.

Additional Information

Other important National Waterway of India

National Waterways	Connects	Rivers	Length in KM	Established
NW - 2	Sadiya - Dhubari	Brahamputra	891	1982
NW - 3	Kottapuram - Kollam	West coast canal, Champakara and Udyogmandals Canal	205	1993
NW - 4	Kakinda - Puducherry	Godawari and Krishna	1095	2008
NW - 5	Talcher - Dhamra	Matai and Mahanadi	623	2008

Q67. Answer: (b) Mewati

The correct answer is Mewati.

Key Points

• Pandit Jasraj was a Mewati gharana-affiliated classical performer from India.

• Jasraj was a groundbreaking artist whose egalitarian outlook made him famous.

• People adored his devotional music and he retained popular appeal in a manner where bhava (passion) and devotion were key.

• He blended Indian devotional music such as haveli sangeet and bhajans (devotional songs/hymns) into a classical environment, making them into serious compositions.

• Mewati gharana was founded by brothers Utd. Ghagge Nazir Khan and Utd. Wahid Khan of Indore.

Additional Information

• Gwalior:

• One of the earliest Khyal Gharana in Indian classical music is that of Gwalior.

• The Mughal emperor Akbar's (1556–1605) reign marked the beginning of the Gwalior Gharana's ascent.

• The most well-known vocalist at the court, Miyan Tansen, was a native of Gwalior.

• Kirana:

• One of the Indian traditional khyal gharanas is Kirana, and its primary focus is on note intonation (swara).

• Agra:

• Agra gharana is a lineage of Nauhar Bani-related Hindustani classical vocal music. Nauhar Bani has so far been linked to the reign of Delhi's Emperor Allauddin Khilji in the year 1300 AD.

• Nayak Gopal is the first musician in this style who is known. The Gharana's dominant fashion at the time was "Dhrupad-Dhamar."

Q68. Answer: (c) S

Seven friends - M, N, O, P, Q, R and S live on seven different floors of the same building, having floors in such a manner that the ground floor is numbered 1, the floor above it number 2, and so on till the topmost floor is numbered 7.

1. M lives on floor number 1.

2. Q lives immediately above M.

3. Only four friends live between the floors of Q and N.

Floor	Person
7	N
6	
5	
4	
3	
2	Q
1	M

4. Only three friends live between the floors of P and M.

Floor	Person
7	N
6	
5	P
4	
3	
2	Q
1	M

5. R lives immediately below O.

Floor	Person
7	N
6	
5	P
4	O
3	R
2	Q
1	M

Only one person S is left and only one floor 6 is vacant.

So, S will occupy the vacant position on 6th floor.

The final arrangement will be as shown below:

Floor	Person
7	N

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6	S
5	P
4	O
3	R
2	Q
1	M

S lives on the sixth floor.

Hence, ‘S’ is the correct answer.

Q69. Answer: (d) Kohima, Nagaland

The correct answer is Kohima, Nagaland.

Key Points

• In 1991, Software Technology Parks of India (STPI) was set up as an autonomous society in the field of Science & Technology under the Mnistry of Electronics and Information Technology (MeitY).

• Nagaland’s first and India’s 61st Software Technology Park of India (STPI) centre was opened on September 17, 2021, in Kohima.

• The Center was inaugurated by the Union Minister of State for Skill Development & Entrepreneurship, Electronics and IT Rajeev Chandrashekhar.

• Mmhonlumo Kikon, Advisor to the Department of IT, Science and Technology, New & Renewable Energy announced that Nagaland Government has decided to create 5,000 jobs for the IT and Information Technology-enabled services (ITES) in the next 2 years.

Additional Information

• About Nagaland (As of July 2022)

• Present Chief Minister of Nagaland is - Neiphiu Rio.

• Present Governor of Nagaland is - Prof Jagdish Mukhi.

• Total Rajya Sabha seats in Nagaland - 1

• Total Lok Sabha seats in Nagaland - 1

Q70. Answer: (d) P

9th letter from the left:

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

2nd to the right of 9th letter from the left:

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

Hence, ‘P’ is the correct answer.

Q71. Answer: (d) 71/5

Shortcut Trick

A does 2/3 work in 8 days → Full work in 12 days.

Efficiency ratio A : B = 100 : 60 = 5 : 3.

Total Work = 12 × 5 = 60 units.

Work done by A + B in 5 days = (5 + 3) × 5 = 40 units.

Remaining work (20 units) done by C in 6 days => Efficiency of C = 20 / 6 = 10/3.

Time for A + C = 60 ÷ (5 + 10/3) = 60 ÷ (25/3) = 180 / 25 = $7^{1}/5$ days.

Therefore The correct answer is $7^{1}/5$ days.

Alternate Method

Given:

A completes $66^{2}/3\%$ (2/3) of work in 8 days.

B is 40% less efficient than A.

A and B work for 5 days, then C finishes the rest in 6 days.

Person	Days	Total Work	Efficiency

A	12	60	5
B	20	3	

Calculations:

=> Time taken by A for full work = 8 × (3/2) = 12 days.

=> Efficiency of B = 60% of A => Efficiency A : B = 5 : 3.

=> If A (Efficiency 5) takes 12 days, Total Work = 5 × 12 = 60 units.

=> Work done by A and B in 5 days = (5 + 3) × 5 = 40 units.

=> Remaining work = 60 − 40 = 20 units.

=> Efficiency of C = Remaining work ÷ Time = 20 / 6 = 10/3 units/day.

=> Combined Efficiency of A and C = 5 + 10/3 = 25/3 units/day.

=> Time taken by A and C = 60 ÷ (25/3) = (60 × 3) / 25 = 180 / 25 = 36 / 5 days.

=> 36 / 5 = $7^{1}/5$ days.

Therefore The correct answer is $7^{1}/5$ days.

Additional Information

Efficiency and Time Relation

The efficiency of a person is inversely proportional to the time taken to complete the work. Efficiency prop. to 1 / Time.

Total Work Formula

Total Work = Efficiency × Time. This is the fundamental formula used to solve Time & Work problems.

Combined Efficiency

When people work together, their individual efficiencies are added to find the total work done per day.

Percentage to Fraction

$66^{2}/3\%$ is equivalent to 2/3, and 40% is equivalent to 2/5.

Q72. Answer: (b) 18 : 107

The pattern/logic is:

1. 14 : 85 → 14 × 6 + 1 = 84 + 1 = 85

2. 18 : 107 → 18 × 6 + 1 = 108 + 1 = 109 ≠ 107

3. 16 : 97 → 16 × 6 + 1 = 96 + 1 = 97

4. 22 : 133 → 22 × 6 + 1 = 132 + 1 = 133

Hence, ‘18 : 107’ is the odd one out.

Q73. Answer: (b) 120 cm2

Given:

The sides of the triangle are 10 cm, 24 cm, and 26 cm

Concept used:

Area of a triangle = 1/2 × base × height

Calculation:

Here,

AB = Height = 10 cm and BC = Base = 24 cm

So, the area of the right angle triangle = 1/2 × 10 × 24

=> 5 × 24

=> 120 cm^2

Therefore The area of a right-angled triangle is 120 cm2.

Additional InformationHere 10, 24, and 26 are the pythagorean triplets.

Q74. Answer: (a) Only I follows

Statement: There is a huge increase in the migration of citizens of Country X to foreign countries as the unemployment rate has been increasing in Country X.

(I) As the unemployment rate has been increasing in Country X, So the citizens of Country X should be provided with alternative sources of income for surviving.

(II) Imposing substantial fees can not reduce the unemployment problem of country X.

Therefore, only course of action (I) follows.

Hence, the correct answer is Option (1).

Some rules to solve Statements and Course of action questions must be kept in mind while solving it.

Rule 1. Have an unbiased and neutral mind frame. Individual perception must not be used to judge the course of action to be taken.

Rule 2. The first step should be to identify the root cause of the problem. Once the problem is solved, a logical mindset should be employed to figure out the course of action.

Rule 3. There must be no extremity involved in the course of action.

Rule 4. A course of action must be able to solve, reduce, or minimize the problem given in the situation.

Q75. Answer: (a) Reshma

Seven friends - Harshita, Eshika, Jaismine, Kapil, Reshma, Mohit and Nilesh are sitting around a circular table facing towards the centre.

1. Harshita is sitting second to the right of Mohit and third to the left of Kapil.

2. Eshika and Jaismine are the immediate neighbours of Kapil.

3. Nilesh is sitting second to the right of Eshika.

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

Only Reshma is left and she will occupy the vacant position.

The final arrangement will be as shown below:

Clearly, Reshma is sitting to the immediate right of Harshita.

Hence, ‘Reshma’ is the correct answer.

Q76. Answer: (b) Ctrl + Y

The correct answer is Ctrl + Y.

Key Points

• To redo something you've undone, press Ctrl+Y or F4.

• Microsoft created the word processing program known as Microsoft Word.

• It is a component of the Microsoft Office suite of productivity software.

• Since its initial release in 1983, Microsoft Word has undergone a number of revisions.

• MS Word is useful for modifying and formatting existing documents as well as creating professional writing.

• It aids with the creation of graphic documents that include images and more.

• The documents can be copied to a flash drive, which functions as your computer's external memory. As a result, you may easily carry along the saved documents.

Additional Information

• Alt+Z is a keyboard shortcut used to access the GeForce Experience in-game overlay.

• Alt+Y is a keyboard shortcut used to open the Database Tools tab in Microsoft Access.

• In MS Word, Ctrl + R is used to align the text to the right of the screen.

• Various Shortcuts in Ms Word:

• Backspace: Delete one character to the left

• Ctrl+Backspace: Delete one word to the left

• Delete: Delete one character to the right

• Ctrl+Delete: Delete one word to the right

• Ctrl+C: Copy or graphics to the Clipboard text

• Ctrl+X: Cut selected text or graphics to the Clipboard

• Ctrl+V: Paste the Clipboard contents

• Alt+Shift+R: Copy the header or footer used in the previous section of the document

• Ctrl+B: Apple bold formatting

• Ctrl+I: Apply italic formatting

• Ctrl+U: Apply underline formatting

• Ctrl+Shift+W: Apply underline formatting to words, but not the spaces between words

• Ctrl+Shift+D: Apply double underline formatting

• Ctrl+D: Open the Font dialog box

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Q77. Answer: (a) Only conclusion II follows

Statements:

X < Y, X = J, Y ≤ M, Z ≤ J

Conclusions:

I. Y = J → False (As, J = X < Y → J < Y)

II. M > Z → True (As, Z ≤ J = X < Y ≤ M → Z < M)

Hence, only conclusion II follows.

Q78. Answer: (b) Rs. 330000

Given:

The area of the base of the tomb is 616 m2

Height of the tomb = 48 m

Concept used:

Area of the base of a cone = πr^2

$l = \sqrt{(r^2 + h^2)}$

Curved surface area of a cone = πrl

r = radius of the base

l = slant height of the cone

h = height of the cone

Calculation:

According to the question,

$\pi r^2 = 616$

=> r2 = 616 × (7/22)

=> r2 = 28 × 7

=> r2 = 196

=> r = √196

=> r = 14

Now,

$l = \sqrt{(14^2 + 48^2)}$

=> $l = \sqrt{(196 + 2304)}$

=> $l = \sqrt{2500}$

=> l = 50

Curved surface area of the tomb = (22/7) × 14 × 50

=> 22 × 2 × 50

=> 2200 m^2

Total cost to plaster = 2200 × 150

=> Rs. 330000

Therefore The cost of plastering its curved surface area is Rs. 330000.

Q79. Answer: (b) Only conclusion II follows

The least possible Venn diagram is:

Conclusions:

(I) All goats are carnivores. → False (As, there is no definite relation between goats are carnivores. Hence, false)

(II) Some animals are goats. → True (As, all goats are animals)

Hence, only conclusion II follows.

Q80. Answer: (c) Prakrit

The correct answer is Prakrit.

Key Points

• Between the third century BCE and the eighth century CE, a series of Middle Indo-Aryan dialects known as the Prakrits were spoken on the Indian subcontinent.

• While those in the northwest of the subcontinent were written in Aramaic and Greek, Prakrit was the language used for the majority of Asokan inscriptions.

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• Inscriptions in Afghanistan employed the Aramaic and Greek scripts.

Additional Information

• Pali:

• One of the primary languages of Buddhist scriptures and literature is Pali, a Middle Indic dialect closely linked to Sanskrit.

• Theravada Buddhists in India, Sri Lanka, and South East Asia have been using it for more than 2000 years.

• They historically thought it to be the language used by the Buddha himself.

• Sanskrit:

• A classical language of South Asia, Sanskrit is a member of the Indo-Aryan family of Indo-European languages.

• The world's earliest book, the Rigveda, was written in Sanskrit.

• Tamil:

• The Tamil people of the Indian subcontinent are native speakers of Tamil, a classical Dravidian language.

Q81. Answer: (a) Magnitude > 7.5

The correct answer is Magnitude > 7.5.

Key Points

• A tsunami is a set of extraordinarily lengthy waves brought on by a significant and abrupt movement of the ocean.

• It is typically brought on by an earthquake at or near the ocean's bottom.

• Waves produced by this power travel in all directions away from their source, occasionally spanning entire ocean basins.

• A tsunami can only be created by an earthquake with a Richter magnitude greater than 7.5.

• The majority of tsunamis are caused by large, shallow earthquakes at subduction zones.

• In the Pacific Ocean along its Ring of Fire subduction zones, tsunamis account for more than 80% of those that occur globally.

Additional Information

• An earthquake's seismic energy is measured using the Richter magnitude scale.

• It is sometimes referred to as the local magnitude (M) scale. The scale is logarithmic in base-10.

• Magnitude 4-4.9:

• A light earthquake is measured at between 4 and 4.9 on the Richter scale. Like minor quakes, they occur often worldwide, can be felt but generally cause no damage.

• Magnitude 5-5.9:

• A moderate earthquake registers between 5 and 5.9 on the Richter scale and causes slight damage to buildings and other structures.

• Magnitude 2-2.9:

• Earthquakes below magnitude 3 or so are rarely felt.

Q82. Answer: (b) Bihar

The correct answer is Bihar.

Key Points

• Bihar has a total density of 1106.

• In the 2001 Census, the density of Bihar was 881.

• The total population of Bihar is 104099452.

Additional Information

• The least densely populated state in India is Arunachal Pradesh.

• Total Density: 17

• Delhi is the most densely Union Territory in India.

• It has a total density of 11320.

• Andaman and Nicobar Islands is the least densely populated UT in India.

• Total Density: 46

• The population density of India is 382.

• Earlier, in the 2001 Census, the total population density was 324.

Q83. Answer: (b) 5/6

Given:

2/3+4/9÷ (7/2-5/6)

Concept used:

Calculation:

2/3+4/9÷ (7/2-5/6)

=> 2/3+4/9÷ ((21 - 5)/6)

=> 2/3+4/9÷ (16/6)

=> 2/3+4/9×6/16

=> 2/3+1/6

=> (4 + 1)/6

=> 5/6

Therefore Required answer is 5/6.

Q84. Answer: (b) Wife

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

Clearly, C is the wife of P.

Hence, 'Wife' is the correct answer.

Q85. Answer: (b) volcanic peak

The correct answer is volcanic peak.

Key Points

• Mount Fuji

• Mount Fuji, is the highest mountain in Japan.

• It rises to 12,388 feet (3,776 meters) near the Pacific Ocean coast in Yamanashi and Shizuoka ken (prefectures) of central Honshu.

• It is a volcano that has been dormant since its last eruption, in 1707, but is still generally classified as active by geologists.

• The mountain is the major feature of Fuji-Hakone-Izu National Park (1936), and it is at the center of a UNESCO World Heritage site designated in 2013.

• Volcanic Mountains or Mountains of accumulation

• These mountains are formed by the accumulation of volcanic materials.

• Mount Mauna Loa in Hawaii Island, Mount Popa in Myanmar, Fuji Yama in Japan etc. are some examples.

Additional Information

• block mountain peak

• These are formed along faults where some large blocks of rock are forced upwards while others are forced down.

• It is also known as fault mountains.

• Examples of Block Mountains are the Rhine Valley and therefore the Vosges mountain in Europe.

• fold mountain peak

• These are formed when two plates run into each other or collide.

• The Himalayas, The Andes, and therefore the Alps are samples of Fold Mountain.

• They're the young mountains of the planet.

Q86. Answer: (b) 12 km

According to given conditions,

Clearly, Evan is 12 km far from his residence.

Hence, '12 km' is the correct answer.

Q87. Answer: (c) Lovlina Borgohain

The correct answer is Lovlina Borgohain.

Key Points

• She lost to reigning world champion Busenaz Surmeneli on 4 August 2021.

• She is only the third Indian boxer to ensure a podium finish after Vijender Singh (2008) and M C Mary Kom (2012).

• Hers is also the first Olympic medal in Indian boxing in nine years.

Additional Information

• Tokyo 2020 Summer Olympics

• Tokyo 2020 has revealed the official Games Motto, "United by Emotion".

• This is the second time the Olympics games were held in Tokyo, earlier it was in 1964.

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• The official mascot of the Tokyo 2020 Summer Olympic Games was set to be a smiling, futuristic creature named Miraitowa.

Important Points

Summer Olympic year	Venue
2024	Paris, France
2028	USA

Q88. Answer: (a) Neither conclusion I nor II follows

The least possible Venn diagram is:

Conclusions:

I. At least some staplers are pens. → False (As, No pen is a sharpener and All sharpeners are staplers → some staplers are not pens)

II. All pencils are pens. → False (As, some pencils are pens)

Hence, neither conclusion I nor II follows.

Q89. Answer: (c) Comptroller and Auditor General of India

The correct answer is Comptroller and Auditor General of India.

Key Points

• As the head of the Indian Audit and Accounts Department, the Comptroller and Auditor General of India is a pillar of the country's democratic system of government.

• He oversees the nation's whole financial system at both the state and central levels as the protector of the public purse.

• By a warrant bearing his signature and seal, the President of India appoints the CAG.

• The CAG stays in office for six years or until they reach age 65, whichever comes first.

• He can also be removed by the President on same grounds and in the same manner as a judge of the Supreme Court.

• In accordance with the Indian Constitution, he is the only authority designated with the duty of auditing the revenue and expenditures of the Union, each State, and the Union Territory Governments.

• Girish Chandra Murmu was appointed as India's new Comptroller and Auditor General on August 7, 2020.

Additional Information

• Finance Commission of India:

• According to Article 280 of the Constitution, the President appoints the Finance Commission.

• Its major responsibility is to make suggestions on how tax income should be divided between the Union and the States as well as among the States themselves.

• The current Indian Finance Commission, the Fifteenth Finance Commission (XV-FC or 15-FC), is chaired by N K Singh and was established in November 2017.

• Attorney General of India:

• The Attorney General of India serves as both the government's main advocate before the Indian Supreme Court and its top legal adviser.

• According to Article 76 of the Constitution, the President of India appoints them on the recommendation of the Union Cabinet.

• R Venkataramani is the current attorney general.

• Finance Minister:

• The head of India's Ministry of Finance is known as the Finance Minister.

• The finance minister is responsible for the fiscal policy of the government

• Nirmala Sitharaman is the current finance minister of India.

Q90. Answer: (d) placer deposits

The correct answer is placer deposits.

Key Points

• Placer deposits, or "placers," are collections of valuable minerals that have been naturally concentrated in overburden, stream sediments, or beach materials.

• The minerals are liberated from solid rock by mechanical and chemical weathering.

• Then they are typically carried to their final resting place by water or wind action.

• Large minerals or minerals with a higher density are deposited when the water's velocity slows.

• Heavy minerals, such as gold, diamond, Ti, Cr, Sn, and magnetite, will be concentrated in locations where water current velocity is low because they will be deposited at a faster rate than low density minerals, such as quartz.

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• Placer deposits have a specific gravity above 2.58.

Additional Information

• Polymetallic nodules:

• Manganese nodules, also known as polymetallic nodules, are mineral concretions on the ocean floor that are made of a central core and concentric layers of iron and manganese hydroxides.

• They contain four essential battery metals: cobalt, nickel, copper and manganese, in a single ore.

• Vein deposits:

• Veins are mineral deposits that develop when fresh mineral material fills a pre-existing fissure or crack inside a host rock. Aqueous solutions are often circulated to perform mineral deposition.

Q91. Answer: (a) N

Six students - P, K, M, T, N and G are sitting on a straight bench facing east.

1. P is sitting at one of the extreme ends and is fourth to the right of M.

2. K and T are the immediate neighbours of G.

Only one person N is left and it will occupy the vacant position.

The final arrangement will be as shown below:

Clearly, N is sitting to the immediate left of M.

Hence, ‘N’ is the correct answer.

Q92. Answer: (d) Surat

The correct answer is Surat.

Key Points

• The majority of India's iron and steel plants, including those in Jamshedpur, Burnpur, Durgapur, Rourkela, Bhilai, and Bokaro, are located in Jharkhand, West Bengal, Orissa, and Chhattisgarh.

• These states are important producers of these resources and have significant coal and iron ore deposits.

• In January 2019, India overtook Japan to become the second-largest producer of steel.

• A total of 111.2 million tonnes (MT) of steel were produced in India in 2019.

• The majority of India's iron ore is produced in Orissa. Over half of India's iron ore production, or 120 million tonnes in 2019–2020, was produced in Orissa.

Additional Information

• Jamshedpur:

• The oldest steel mill in the nation is owned by Tata Iron and Steel Company (TISCO).

• Jamshedji Tata founded it in 1907, near the confluence of the rivers Subarnarekha and Kharkai in Jharkhand, and it began producing in 1911.

• TISCO is located in Jamshedpur, Jharkhand, that's why this city is referred to be the "Steel City of India."

• Bhilai:

• The first and largest producer of steel rails in India is the Bhilai Steel Plant (BSP), which is situated in Bhilai, Chhattisgarh.

• It is also a significant producer of wide steel plates and other steel products.

• It was established in 1959 with assistance from the USSR.

• Bokaro:

• The largest steel plant in Asia, Bokaro Steel Plant, is situated in Jharkhand's Bokaro district.

• It is India's fourth integrated public steel factory established with Soviet assistance. It was established in 1964 as a limited company.

Q93. Answer: (a) 113.40

Given:

Principal (P) = Rs. 540

Rate (R) = 6%

Time(T) = 31/2 years.

Formula Used:

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

Calculation:

According to question,

SI = (540 × 6 × 7)/100 × 2

=> (42 × 27)/100

=> 113.40

Therefore The simple interest (in Rs.) on Rs. 540 at 6% per annum in 31/2 years is 113.40.

Q94. Answer: (d) 5

Shortcut Trick

Identify the operator priority: Division and Multiplication are solved before Addition and Subtraction.

Solve the core fraction: 5 × 5 ÷ 5 = 5 (the multiplication and division by 5 cancel each other out).

The expression simplifies to: 5 + 5 − 5.

Final result: 10 − 5 = 5.

Therefore The correct answer is 5.

Alternate Method

Given:

Expression = 5 + 5 × 5 ÷ 5 − 5

Formula Used:

BODMAS Rule (Brackets, Of, Division, Multiplication, Addition, Subtraction)

=> 5 + (25 ÷ 5) − 5

=> 5 + 5 − 5

=> 10 − 5

=> 5

Therefore The correct answer is 5.

Additional Information

BODMAS Rule

It ensures a standard sequence for solving mathematical expressions: Brackets, Orders, Division/Multiplication, then Addition/Subtraction.

Priority of Operations

Multiplication and Division have the same rank and should be solved from left to right as they appear in the expression.

Addition and Subtraction

Similarly, Addition and Subtraction carry equal priority and are calculated from left to right after all other operations are completed.

Q95. Answer: (c) 59

The pattern/logic followed here is:

According to the alphabetical positions of the letters,

• Similarly,

• Hence, ‘59’ is the correct answer.

Q96. Answer: (d) 9

Given:

15 people is doing a work in 12 days

Concept used:

M1 × D1 = M2 × D2

Here,

M1 = People at the 1st case

D1 = Time at the 1st case

M2 = People at the 2nd case

D2 = Time at the 2nd case

Calculation:

According to the concept,

M1 = 15

D1 = 12

D2 = 20

Let M2be x

So,

15 × 12 = x × 20

=> 180 = 20x

=> x = 180/20

=> x = 9

So, M2 = 9 people

Therefore 9 people can complete the same work in 20 days.

Q97. Answer: (c) Angiosperms

The correct answer is Angiosperms.

Key Points

• Angiosperms

• They are flowering and seed-producing plants.

• It consists of 64 orders, 416 families, approximately 13,000 known genera, and 3,00,000 known species.

• Their seeds develop in the ovaries of flowers and are surrounded by a protective fruit.

• Examples of angiosperms are fruits (apple, mango, banana, etc), vegetables (potato, bitter gourd, beetroot, etc.), grains (Rice, wheat, dal, etc.), and flowers (Marigold, rose, jasmine, etc.).

• Angiosperms are classified as Monocotyledons (monocots) and Dicotyledons (dicots) where monocots are flowering plants whose seeds contain only one embryonic leaf or cotyledon and dicots are flowering plants whose seeds contain two embryonic leaves or cotyledons

Additional Information

• Pteridophytes

• Pteridophytes are the first group of plants to become sporophytic.

• The reduction division occurs in pteridophytes when spores are formed in them.

• Diploid is the dominant generation in pteridophytes.

• They are also known as vascular cryptogams.

• It produces spores, has vascular tissues, and does not have seeds in them.

• It includes ferns, Horsetails, and Lycopods or Lycophytes.

• Gymnosperms

• Gymnosperms are also known as acrogymnosperms.

• It is a group of seed-producing plants.

• It includes conifers, cycads, ginkgo, and gnetophytes.

• The word gymnosperms in greek means naked seeds because they do not have an outer covering or shell around their seeds.

• They do not produce flowers i.e they are non-flowering plants and neither do they produce fruits.

• Its pollination is done by the wind (Anemophilous).

• Bryophytes

• Bryophytes are the amphibian of the plant kingdom.

• They have a unique feature as compared to other green plant groups that are their sporophyte is attached to the gametophyte.

• The first land inhabitant plants are bryophytes.

• The ciliated sperms and archegonia are present in bryophytes.

• Examples of Bryophytes are hornworts, liverworts, and mosses.

Q98. Answer: (a) 17

Shortcut Trick

Relative speed (opposite direction) = 61 + 47 = 108 km/h

Convert to m/s = 108 × (5 ÷ 18) = 30 m/s

Total distance = 265 + 245 = 510 m

Time = Distance ÷ Speed = 510 ÷ 30 = 17 seconds

Therefore The correct answer is 17 seconds.

Alternate Method

Given:

L1 = 265 m, S1 = 61 km/h

L2 = 245 m, S2 = 47 km/h

Formula Used:

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Total Distance = L1 + L2

Relative Speed (Opposite Direction) = S1 + S2

Time = Total Distance ÷ Relative Speed

Calculations:

=> Total Distance = 265 + 245 = 510 m

=> Relative Speed = 61 + 47 = 108 km/h

=> Speed in m/s = 108 × (5 ÷ 18) = 30 m/s

=> Time = 510 ÷ 30

=> Time = 17 seconds

Therefore The correct answer is 17 seconds.

Additional Information

Relative Speed in Same Direction

When two objects move in the same direction, their relative speed is the difference between their individual speeds: S1 − S2 (where S1 > S2).

Speed Unit Conversion Tricks

To convert km/h to m/s, multiply the value by (5 ÷ 18). Conversely, to convert m/s to km/h, multiply by (18 ÷ 5).

Crossing a Platform or Bridge

When a moving train crosses a stationary object with length (like a platform, bridge, or tunnel), the total distance covered is the length of the train plus the length of the object.

Q99. Answer: (b) 25%

The correct answer is 25%.

Key Points

• Second Five-year plane

• The second five-year plan was based on the ideas of Prasanta Chandra Mahalanobis.

• The second five-year plan was spread across the time period of 1956 to 1961.

• The areas of focus of the second five-year plan were on the "development of the public sector and rapid industrialization".

• The plan attempted to determine the optimal allocation of investment between productive sectors in order to maximize long-run economic growth.

• It used the prevalent state-of-the-art techniques of operations research and optimization as well as the novel applications of statistical models developed at the Indian Statistical Institute.

• The plan assumed a closed economy in which the main trading activity would be centered on importing capital goods.

• From the Second Five-Year Plan, there was a determined thrust towards substitution of basic and capital good industries.

Additional Information

• Planning Commission

• It was an institution in the Government of India.

• It formulated five-year plans.

• It was formed on 15 March 1950.

• It was dissolved on 17 August 2014 and replaced by the new institution NITI Aayog.

• The Prime Minister of India was the ex-officio chairman of the Planning Commission.

Q100. Answer: (b) HFLJ

The logic followed here is:

According to the alphabetical positions of the letters,

• • Similarly,

• Hence, ‘HFLJ’ is the correct answer.

Q101. Answer: (a) ÷, × and 2, 5

1. ÷, × and 2, 5

Given equation: 2 + 8 ÷ 5 × 4 - 6 = 3

After interchanging the two signs and numbers in the given option, we get:

5 + 8 × 2 ÷ 4 - 6 = 3

=> 5 + 4 – 6 = 3

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=> 9 – 6 = 3

=> 3 = 3

2. +, - and 6, 8

Given equation: 2 + 8 ÷ 5 × 4 - 6 = 3

After interchanging the two signs and numbers in the given option, we get:

2 - 6 ÷ 5 × 4 + 8 = 3

=> 2 – 4.8 + 8 = 3

=> 10 – 4.8 = 3

=> 5.2 ≠ 3

3. ÷, - and 2, 6

Given equation: 2 + 8 ÷ 5 × 4 - 6 = 3

After interchanging the two signs and numbers in the given option, we get:

6 + 8 - 5 × 4 ÷ 2 = 3

=> 6 + 8 – 10 = 3

=> 14 – 10 = 3

=> 4 ≠ 3

4. ÷, + and 8, 5

Given equation: 2 + 8 ÷ 5 × 4 - 6 = 3

After interchanging the two signs and numbers in the given option, we get:

2 ÷ 5 + 8 × 4 - 6 = 3

=> 0.4 + 32 – 6 = 3

=> 32.4 – 6 = 3

=> 26.4 ≠ 3

Hence, '÷, × and 2, 5' is the correct answer.

Q102. Answer: (c) 12 years

The correct answer is 12 years.

Key Points

Babur

• Babur was born in 1483 in Andijan, which is now Uzbekistan.

• His father was the ruler of the small kingdom of Ferghana in Central Asia.

• When Babur was 12 years old, his father died, and he became the ruler of Ferghana.

• However, he was soon driven out of his kingdom by his enemies, and he spent the next few years wandering in Central Asia and trying to regain his throne.

• Babur finally succeeded in regaining Ferghana in 1494 when he was 12 years old.

• This was the beginning of his long and eventful career as a military leader and ruler, which eventually led him to conquer much of South Asia and establish the Mughal Empire.

Source - NCERT

Additional Information

• Some other important Mughal Emperor

• Humayun:

• Humayun was the eldest son of Babur.

• In the Battle of Chausa, 1539 and Battle of Bilgram, 1540 (Battle of Kanauj), Humayun was defeated by Sher Khan.

• After losing his kingdom, Humayun became an exile for the next 15 years.

• In 1555, Humayun defeated the Afghans and recovered the Mughal Throne.

• He died in 1556 due to his fall from the staircase of his library.

• Akbar:

• Akbar was one of the mightiest emperors during the Mughal Era.

• He was the son of Mughal emperor Humayun and Hamida Banu Begum.

• Akbar was born in October 1542 and died on 27th October 1605.

• He was the third Mughal Emperor.

• His reign was between 1556-1605 AD.

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• He was crowned in 1556, at the young age of thirteen years.
• He was assisted by Barram Khan.
• Akbar's tomb is located in Sikandra Agra.
• Its construction was started by Akbar in 1605 and completed by Jahangir.
• It is a beautiful five-story tomb.
• Aurangzeb:
• Aurangzeb was the son of Shah Jahan.
• The original name of Aurangzeb was Muhi-ud-Din Muhammad.
• He adopted the title of 'Alamgir' which means 'conqueror of the world'.
• He was the sixth Mughal emperor, who ruled over almost the entire Indian subcontinent for a period of 49 years.
• He was died on 1707.

Q103. Answer: (a) 1296

Given:
Numbers are 27, 54, and 72
Concept used:
For this type of question required number is always multiple of LCM of the given number
Least Common Multiple(LCM) is a method to find the smallest common multiple between any two or more numbers.
Calculation:
LCM of 27, 54, 72 = 216
So, the perfect square number should also be divisible by 216
From the options, only 1296 is the possible value which is also a multiple of 216
$1296 = 36^2$
Therefore Required least perfect square number is 1296.

Q104. Answer: (d) Uttar Pradesh

The correct answer is Uttar Pradesh.
Key Points
• Census of India 2011
• The Census of 2011 was the 7th census after Independence.
• A population Census is a process of collecting, compiling, analyzing, and disseminating demographic, social, cultural, and economic data relating to all persons in the country, at a particular time in ten years intervals.
• Uttar Pradesh is the most populated state of India.
• 16.16% of Uttar Pradesh's total population lives in Uttar Pradesh.
• Sikkim is the least populated State in India.
• Meghalaya has the highest population growth rate (27.95%) among the states.
• The population of Andaman and Nicobar is the lowest.
• Kerala is the most literate state in India.
• Bihar was the least Literate state in India.
• C. Chanderamouli was the Census Commissioner of India in 2011.
Additional Information
• During the British rule in India, the first census was conducted in 1872.
• The 1872 Census did not include all of the British territories they owned or controlled.
• W.C.Plowden conducted the 1881 Census on the 17th of February.
• In 1951, the first census of independent India was held.

Q105. Answer: (b) 236796

Concept used:
Divisibility rule of 3 = A number is completely divisible by 3 if the sum of its digits is divisible by 3.
Divisibility rule of 4 = If the last two digits of a number are divisible by 4, the number is divisible by 4.
Calculation:
$12 = 4 \times 3$
So, the number should be divisible by both 4 and 3

As numbers of all the options will be divisible by 4 [Because last 2 digit is divisible by 4]

Now,

Option 1:

2 + 8 + 4 + 5 + 7 + 6 = 32 not divisible by 3

Option 2:

2 + 3 + 6 + 7 + 9 + 6 = 33 divisible by 3

Option 3:

1 + 9 + 4 + 7 + 9 + 2 = 32 not divisible by 3

Option 4:

1 + 5 + 7 + 8 + 4 + 4 = 29 not divisible by 3

So, the 236796 is the only number which is divisible by both 4 and 3

Therefore Required number is 236796.

Q106. Answer: (a) Brigadier SV Saraswati

The correct answer is Brigadier SV Saraswati.

Key Points

• Brigadier SV Saraswati

• President of India Ram Nath Kovind Present the award to Brigadier SV Saraswati in Virtual ceremony.

• Brigadier Saraswati hails from chittoor district of Andhra Pradesh.

• She was commissioned into the Military service nursing (MNS) on December 28, 1983.

• As a renowned Operation Theatre Nurse, Brigadier Saraswati has assisted in over 3,000 emergency and life saving surgeries.

Additional Information

• National Florence Nightingale Award

• In 1973, the Indian government instituted the National Florence Nightingale Award.

• The National Florence Nightingale Award is the highest honor in the India that a nurse can receive for exceptional professionalism.

• It is named after Florence Nightingale also known as the 'The Lady with the Lamp'

• The National Florence Nightingale Award carries Rs. 50,000 /- cash.

Q107. Answer: (c) Argentina

The correct answer is Argentina.

Key Points

• Copa America

• Copa América, (Spanish: America Cup) formerly (until 1975) South American Championship of Nations, quadrennial South American football (soccer) tournament that is the continent's premier competition in that sport.

• The Copa América is the world's oldest international football tournament.

• The event was first held in 1916 in honor of the 100th anniversary of Argentina's independence with Uruguay winning the inaugural title.

• It took place every one to four years before it adopted its current quadrennial format in 2007.

Additional Information

• The Copa America is governed by the Confederacion Sudamericana de Futbol (commonly known as CONMEBOL).

• The tournament's field consists of the 10 national teams that are members of CONMEBOL.

• Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay, and Venezuela.

• Plus two additional national teams are invited to participate in the event.

Year	Winner	Runner up
1916	Uruguay	Argentina
2019	Brazil	Peru
2021	Argentina	Brazil

Q108. Answer: (c) Profit, 3.5 %

given by:

SP of diameter = Rs. 211.2
Loss % = 12
Concept used:
SP = CP - CP × Damage%
Profit % = (Profit/CP) × 100
Here,
SP = Selling Price
CP = Price
Calculation:
Let CP be 100a
According to the question,
100a - 100a × 12% = 211.2
=> 100a - 12a = 211.2
=> 88a = 211.2
=> a = 211.2/88
=> a = 2.4
So, CP = 100 × 2.4 = Rs. 240
Now, new SP = Rs. 248.4
So, gain = 248.4 - 240
=> Rs. 8.4
Profit % = (8.4/240) × 100
=> 3.5
So, profit on sale is 3.5%
Therefore His profit percentage is 3.5%.
Shortcut Trick
=> 211.20 = 88%
=> 1 = 88%/211.20
Therefore Rs. 248.40 = (88%/211.20) × 248.40 = 3.5%

Q109. Answer: (d) Only conclusion II is true

Statements:
α ≤ μ < β ≤ Ω, β > M = @
Conclusions:
I. α < @ → False (As, α ≤ μ < β > M = @ → a definite relation between α and @ cannot be determined)
II. @ < Ω → True (As, @ = M < β ≤ Ω → @ < Ω)
Hence, only conclusion II is true.

Q110. Answer: (c) Neither assumption I nor II is implicit.

Statement: A cab can be booked by the customer using mobile apps.
Assumptions:
I) Sales of luxury cars will increase substantially. → Not implicit. (The statement talks about cabs and not luxury cars. Therefore, the sales of luxury cars cannot be assumed from the given information.)
II) Customers will have to pay less. → Not implicit. (It is not implied that booking via mobile apps is less expensive.).
Therefore, neither assumption I nor II is implicit.
Hence, the correct answer is Option (3).

Q111. Answer: (c) 3

GIven:
Given set of numbers is 2, 7, 5, 6, 7, 5, 4, 4, 0, 3, 0, 3, 1, 1, 3
Concept used:
The following steps are helpful while applying the median formula for ungrouped data.
Step 1: Arrange the data in increasing order.
Step 2: Secondly, count the total number of observations 'n'.

Step 3: Check if the number of observations 'n' is even or odd.

Median Formula When n is Odd

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

Calculation:

The numbers in increasing order = 0, 0, 1, 1, 2, 3, 3, 3, 4, 4, 5, 5, 6, 7, 7

Total number of terms = 15 which is odd term

So, median = [(15 + 1)/2]^(th) term

=> (16/2)^(th) term

=> 8^(th) term

8th term of the numbers is 3

Therefore The median of the numbers is 3.

Q112. Answer: (c) either House of Parliament

The correct answer is either House of Parliament.

Key Points

• Procedure for impeachment of the President:

• When a President is to be impeached for violation of the Constitution, the charge shall be preferred by either House of Parliament.

• The impeachment charges are signed by one-fourth of the members of the Lok Sabha.

• A 14-day notice is given to the President of India.

• Then, Lok Sabha passes the impeachment charges with the two-thirds majority and sends it to Rajya Sabha.

• Then, Rajya Sabha investigates the charges.

• While Rajya Sabha is investigating the charges, the President has the right to sit in the proceedings.

• Rajya Sabha agrees to the charges and passes it with a two-thirds majority and the President is removed.

Additional Information

• Union Council of Ministers

• Article 75 deals with the appointment of the Council of Ministers by the President of India.

• Council of ministers aid and advise the President in the exercise of his/her functions.

• It represents the highest executive body in the Indian polity.

• It is also called the Cabinet, where most executive decisions are made.

• Lok Sabha

• Lok Sabha is the lower house of India's bicameral Parliament.

• The Hindi name of Lok Sabha was adopted by the house of the people on 14th May 1954.

• The full term of a Lok Sabha is 5 years.

• Fifth Lok Sabha from 1971 to 1977(5 years 10 months and 6 days) is the longest Lok Sabha in India.

• Twelfth Lok Sabha from 1998 to 1999(1 year 1 month and 4 days) is the shortest Lok Sabha in India.

• Lok Sabha is constituted under article 81 of the constitution.

• G. V Mavlankar is the father of Lok Sabha.

• The maximum strength of the Lok Sabha is fixed at 550.

• Money bill can introduce only in Lok Sabha and not in Rajya Sabha.

• Uttar Pradesh has the maximum membership in Lok Sabha.

• Rajya Sabha

• The Rajya Sabha is the upper house of the bicameral Parliament of India.

• Rajya Sabha is known as the house of elders.

• Rajya Sabha is constituted under Article 80 of the Indian constitution.

• Rajya Sabha is a permanent body and not subject to dissolution.

• NOTE - The maximum strength of the Rajyasabha is fixed at 250.

• Rajya Sabha currently has a maximum membership of 245.

• Among its 245 members 233 are elected by the legislatures of the states and union territories using single transferable votes.

• 12 members are appointed by the President of India.

• One-third of the members of the Rajya Sabha retire every two years.

• Rajya Sabha represents the federal character of the constitution.

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• The Vice President of India is the ex-officio Chairman of the Rajya Sabha.

Q113. Answer: (a) E

Eight students - A, B, C, D, E, F, G and H are sitting around a circular table facing the centre, but not necessarily in the same order.

1. B is sitting third to the right of A.

2. H is sitting third to the left of A.

3. C is sitting fourth to the right of B.

4. B is sitting third to the left of G.

5. F is the immediate neighbour of D.

6. D is sitting second to the right of C.

Only E is left and it will occupy the vacant position.

Clearly, E is sitting second to the right of F.

Hence, ‘E’ is the correct answer.

Q114. Answer: (a) Sriman Narayan Agarwal

The correct answer is Sriman Narayan Agarwal.

Key Points

• Espousing the spirit of the Gandhian economic thinking, Sriman Narayan Agarwal formulated The Gandhian Plan in 1944. The plan laid more emphasis on agriculture.

Gandhian economy:

• According to Gandhi, the salvation of the Indian economy depends on rural development and rural transformation.

• The prevailing agrarian situation indicates that this cannot be brought about in the context of India's present obsession with economic growth, and the trend of economic development in the world, in general.

• A strong rural economy lays the foundation for a strong society and nation.

• The Gandhian economy is based on the principle of Trusteeship.

• According to Gandhi, the cause of all contradictions is centralism.

• It may be described as a situation in which a few controls the means and the power to make decisions that affect many that are left out.

• Gandhian principle of economics rejects the precepts and assumptions of mainstream economics.

• It represents an alternative to mainstream economic theories as a way to promote economic progress without emphasizing material pursuits or compromising human development.

Q115. Answer: (a) RJJWZY

The logic followed here is:

According to the alphabetical positions of the letters,

Similarly,

Hence, ‘RJJWZY’ is the correct answer.

Q116. Answer: (a) 2331/3

Given:

Speed of the first person = 5 km/h

Speed of the second person = 10 km/h

Train taken to overtake the first person = 21 sec

Train taken to overtake the second person = 24 sec

Concept used:

Speed = Distance/Time

km/h × 5/18 = m/sec

When two bodies move in the same direction, then Relative speed = the Difference in their speeds

Calculation:

Let the length and the speed of a train be L m/sec and V m respectively.

Speed of the first person in m/sec = 5 × 5/18 = 25/18 m/sec

Speed of the second person in m/sec = 10 × 5/18 = 25/9 m/sec

Now,

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Relative speed of the train and the first person = {V – (25/18)} m/sec
So,
V – (25/18) = L/21
=> V = L/21 + 25/18 ----(1)
Again,
Relative speed of the train and the second person = {V – (25/9)}m/sec
So,
{V – (25/9)} = L/24
=> V = L/24 + 25/9 ----(2)
From eq (1) and eq (2) we can say,
L/21 + 25/18 = L/24 + 25/9
=> L/21 – L/24 = 25/9 – 25/18
=> (8L – 7L)/(168) = (50 – 25)/(18)
=> (L)/168 = 25/18
=> L = (25/18) × 168
=> L = 2331/3 m
Therefore The length of the train is 2331/3 m.

Q117. Answer: (b) 144 cm

Given:
L = 3B
D = 18√10 cm
Concept used:
Perimeter of a rectangle = 2(L + B)
$D^2 = L^2 + B^2$
Here,
D = diagonal of the rectangle
L = length of the rectangle
B = breadth of the rectangle
Calculation:
Let the breadth of the plot be x
So, the length of the plot = 3x
Now,
$(3x)^2 + x^2 = (18\sqrt{10})^2$
=> 9x2 + x2 = 324 × 10
=> 10x2 = 3240
=> x2 = 3240/10
=> x2 = 324
=> x = 18
So, length = 18 × 3 = 54 cm, and breadth = 18 cm
Now,
Perimeter = 2(54 + 18)
=> 2 × 72
=> 144
Therefore The perimeter of the rectangle is 144 cm.

Q118. Answer: (a) 91

Swethi ranked 46th from the top and 46th from the bottom in her class.
Number of students in the class = position from top+ position from bottom - 1
=46 + 46 - 1
= 92 - 1
= 91

Hence, '91' is the correct answer.

Q119. Answer: (b) 10

Given:

Inner radius 2 m

Height of the well = 16.8 m

Height of the embankment = 48 cm

Concept used:

The volume of a cylinder = πr2h1 cubic units

Volume of a hollow cylinder = π(R2 - r2)h2 cubic units

R = outer radius,

r = inner radius, and

h1 = height of the cylinder

h2 = height of the embankment

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

Calculation:

Let width of the embankment be x m

Here,

r = 2 m

h1 = 16.8 m

R = (2 + x)

h2= 48 cm

Now,

According to the question,

πr2h1 = π(R2 - r2)h2

=> $2^2 \times 16.8 = \{(2 + x)2 - 22\} \times (48/100)$ [1 cm = 0.01 m]

=> $(4 \times 16.8 \times 100)/48 = \{(2 + x)2 - 22\}$

=> $140 = 2^2 + x^2 + 2 \times 2 \times x - 2^2$

=> 140 = x2 + 4x

=> x2 + 4x - 140 = 0

=> x2 + 14x - 10x - 140 = 0

=> x(x + 14) - 10(x + 14) = 0

=> (x + 14)(x - 10) = 0

So, value of x = 10 or - 14

The value of x cannot be in negative so x = 10

So, width of the embankment = 10 m

Therefore The width (in m) of the embankment is 10 m.

Additional InformationHere the embankment was made with the amount of soil dug out from the well

And the amount of soil dug out is equal to the volume of the well

Q120. Answer: (b) 57%

Calculation:

Total number of people who walked to their working place = 55

Total number of people who take a bus to their working place = 35

Difference = 55 - 35

=> 20

Required % = (20/35) × 100

=> 57.14% ≈ 57%

Therefore Required percentage is 57%.

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