RRB NTPC CBT-I Official Paper (Held On: 16 Feb 2021 Shift 2) (Previous Year Paper)

RRB NTPC • 2021 • 100 questions • 90 minutes • Answer key and solutions

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Scan the QR code or click the link to open it.

Q1. Find the total amount (in Rs.) on Rs. 4,500 at 12% per annum for 2 years and 8 months compounded annually.

(a) Rs. 6,097.28
(b) Rs. 6,096.38
(c) Rs. 6,069.38
(d) Rs. 6,095.95

Q2. Which of the options is NOT similar to the given combination of numbers?

(8, 15, 23, 120)

(a) (9, 18, 27, 162)
(b) (7, 14, 98, 21)
(c) (12, 5, 17, 60)
(d) (11, 12, 23, 132)

Q3. Solve the given equations.

√12321 × √? = 13431

(a) 14621
(b) 14541
(c) 14641
(d) 14631

Q4. What is the ore of aluminium called?

(a) Malachite
(b) Bauxite
(c) Magnetite
(d) Haematite

Q5. There are five trucks A, B, C, D and E having different colours, i.e. blue, green, orange, red and brown, not necessarily in that order. They are running on five different highways, i.e. H1, H2, H3, H4 and H5, not in the same order. A is on H4 and is not blue or brown. B is green and is not running on H3 or H5. C is blue and is not on H1. D is running on H1 and is not orange or brown. E is not running on H5 or H2. On which highway is E running?

(a) H3
(b) H5
(c) H2
(d) H4

Q6. If (x + 1/x) = 7, then (x - 1/x) is equal to:

(a) 5√5
(b) √5
(c) 2√5
(d) 3√5

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Q7. A vendor sold 16 clips for a rupee and got 25% profit. How many clips did he buy for a rupee?

(a) 20
(b) 15
(c) 25
(d) 10

Q8. The base and the altitude of a right-angled triangle are 15 cm and 8 cm respectively. What is the altitude from the opposite vertex to its hypotenuse?

(a) 71/15cm
(b) 17/17cm
(c) 711/17cm
(d) 71/17cm

Q9. The traffic lights at three different signal points change after every 35 s, 45 s and 75 s respectively. If all change simultaneously at 6 : 20 : 15 hours, then at what hours will they change again simultaneously?

(a) 10 : 30 : 30
(b) 6 : 40 : 35
(c) 6 : 46 : 30
(d) 8 : 18 : 20

Q10. Out of the four numbers listed, three are alike in some manner and one is different. Select the odd one.

(a) 143
(b) 105
(c) 21
(d) 65

Q11. 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 follows(s) from the statements.

Statements:

All monkeys are donkeys. Some donkeys are horses. No horse is a monkey.

Conclusions:

1. Some horses are monkeys.

2. Some donkeys are not monkeys

(a) Only conclusion 2 follows.
(b) Only conclusion 1 follows.
(c) Neither 1 nor 2 follows.
(d) Both 1 and 2 follow.

Q12. Which one of the following bodies are NOT Bretton Woods Institutions?

(a) United Nations
(b) International Monetary Fund (IMF)
(c) World Bank
(d) Both 2 and 3

Q13. Solve the given equation

$(3 + \sqrt{5})/(3 - \sqrt{5}) + (3 - \sqrt{5})/(3 + \sqrt{5}) + (\sqrt{5} - 1)/(\sqrt{5} + 1) = ?$

(a) $(13 - \sqrt{5})/2$
(b) $(17 - \sqrt{5})/2$
(c) $(16 - \sqrt{5})/2$
(d) $(15 - \sqrt{5})/2$

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Q14. Consider the given statement and decide which of the given assumptions is/are implicit in the statement.

Statement:

"From next month, everyone has to pay income tax no matter what your income is" - Government notice said.

Assumptions:

I. Government Treasury fund is getting short.

II. People of the country have become rich.

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

Q15. The_____oval spot in the human eye is the area of best vision.

(a) white
(b) blue
(c) green
(d) yellow

Q16. In May 2018, the government of India approved 'National Policy on Biofuels' to promote biofuels in the country. Which of the following Indian states was the first to implement this policy?

(a) Rajasthan
(b) Kerala
(c) Himachal Pradesh
(d) Goa

Q17. solve the given equation.

$(3 + 4 \div 2 \times 3)/(4 + 3 \times 2 \div 3) =$

(a) 3/4
(b) 5/4
(c) 3/5
(d) 3/2

Q18. The value of the expression

$(1 + 1/3)(1 + 1/4)(1 + 1/5)...(1 + 1/(n - 1))$ is:

(a) $(n/3)$
(b) $(1 + 1/n)$
(c) $(n/(n - 1))$
(d) $(1/3)$

Q19. With which of the following organisations were Ram Prasad Bismil, Chandrashekhar Azad and Bhagat Singh associated?

(a) Naujawan Bharat Sabha
(b) Azad Hind Fauj
(c) Hindustan Socialist Republican Association
(d) Hind Socialist Republican Association

Q20. In April 2019,_____became the first Indian woman to be elected to the Fellow of the Royal Society (FRS).

(a) Tessy Thomas
(b) Kiran Mazumdar Shaw
(c) Dr. Indira Hinduja
(d) Dr. Gagandeep Kang

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Q21. What is the missing term in the given series?

5,5,15/4,5/2,25/16,...,35/64,5/16

(a) 77/45
(b) 15/16
(c) 15/28
(d) 15/11

Q22. VVPAT is a machine that is used in Indian elections to ensure that the citizen's vote has been correctly placed. What is the full form of VVPAT?

(a) Voter Verifiable Paper Audit Trail
(b) Voting Verification Paper Audit Tally
(c) Voting Verification Paper Audit Trail
(d) Voter Voting Pattern Audit Tally

Q23. Which one of the following classical dances in its present form is influenced by Mughal tradition?

(a) Mohiniyattam
(b) Kathakali
(c) Bharatanatyam
(d) Kathak

Q24. A circle of radius 7 cm circumscribed an equilateral triangle. The length of the side of the equilateral triangle is:

(a) 7 cm
(b) 5√3 cm
(c) 7√2 cm
(d) 7√3 cm

Q25. Find out the mean for the given data.

6.7, 7.2, 8.7, 9.2, 10.1

(a) 8.37
(b) 8.39
(c) 8.38
(d) 8.36

Q26. Select the term that will come next in the following series.

2B, 4D, 7G, 12L, 19S, 30D, 43Q, ?

(a) 60Z
(b) 64S
(c) 63X
(d) 60H

Q27. Find the value of 1/1.4 + 1/4.7 + 1/7.10 + ... + 1/47.50.

(a) 49/50
(b) 47/50
(c) 47/150
(d) 49/150

Q28. If (m + n) : (m - n) = 7 : 3, then (m^3 + n^3) : (m^3 - n^3) = ?

(a) 133 : 117
(b) 117 : 13
(c) 17 : 133
(d) 117 : 133

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Q29. Which one of the following software applications is NOT a part of Microsoft Office?

(a) Word
(b) PowerPoint
(c) Acrobat Reader
(d) Excel

Q30. Select the number from among the given options that can replace the question mark (?) in the following series.

5, 7, 14, 36, ?

(a) 99
(b) 117
(c) 103
(d) 101

Q31. In a certain code language, COCKROACH is written as CPENVRCDH and SCOOTER is written as SDQRVFR. How will MESMERIZE be written as in that language?

(a) MFUPIJKAE
(b) MFJPIUKAE
(c) MFUPIUKAE
(d) MFUPIURAE

Q32. Which of the following nuclear power plants has been INCORRECTLY matched with the state within which it is located?

(a) Kakrapar - Gujarat
(b) Kalpakkam - Karnataka
(c) Kudankulam - Tamil Nadu
(d) Kaiga - Karnataka

Q33. National Museum of Indian Cinema was inaugurated in January 2019 in:

(a) Chennai
(b) Delhi
(c) Mumbai
(d) Kolkata

Q34. Which of the following is NOT an instrument of the monetary policy of the Reserve Bank of India?

(a) Goods and Services Tax(GST)
(b) Cash Reserve Ratio (CRR)
(c) Statutory Liquidity Ratio (SLR)
(d) Bank Rate

Q35. As of December 2020, who is the coach of the Indian men's football team?

(a) Graham Reid
(b) Stephen Constantine
(c) Igor Stimac
(d) Shyam Thapa

Q36. In the context of the GST framework, what is the full form of SGST?

(a) Systemic Goods & Service Tax
(b) Special Goods & Service Tax
(c) State Goods & Service Tax
(d) Statutory Goods & Service Tax

Q37. The values of the mode and the mean are 7.52 and 9.83 respectively in a moderately asymmetrical distribution. Find the median of the distribution.

(a) 9.00
(b) 9.06

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(c) 8.86
(d) 8.90

Q38. What would be the highest value of X in the given equation? 5X1 + 6Y7 + 3Z3 = 1471
(a) 5
(b) 6
(c) 7
(d) 3

Q39. Consider the given statement and decide which of the given assumptions is/are implicit in the statement.
Statement:
If you don't follow traffic rules, you will be fined.
Assumptions:
I. People may start following rules to avoid fine.
II. Traffic rules are for people's safety.
(a) Both I and II are implicit.
(b) Neither I nor II is implicit.
(c) Only assumption II is implicit
(d) Only assumption I is implicit.

Q40. The speed of a bullet train is 35% more than that of an electric train. If the electric train takes 3 h 45 min for a fixed distance, what will be the time taken by the bullet train to cover the same distance?
(a) 25/9 h
(b) 27/9 h
(c) 72/9
(d) 127/9

Q41. If the interior angles of a pentagon are in the ratio 1 : 3 : 5 : 7 : 11, then the measure of the smallest interior angle is :
(a) 10º
(b) 15º
(c) 20º
(d) 25º

Q42. If tan θ = - 12/5, then the value of sin θ is :
(a) √12/13
(b) √(12/13)
(c) • 12/15
(d) • 12/13

Q43. Which one of the following is the largest commercial bank in India?
(a) Punjab National Bank
(b) State Bank of India
(c) ICICI
(d) Axis Bank

Q44.)(The sum of 3.26^(_) - 2.14^(_) + 1.33^(___) is: ()
(a) 2.25^(___)
(b) 2.55^(___)
(c) 2.45^(___)
(d) 2.15^(___)

Q45. P is married to X who is the daughter of M.T is the paternal grandmother of O who is the son of P. S is the husband of M and W is P's father. What is the relation of O with W?
(a) Brother's son
(b) Sister's son

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(c) Daughter's son
(d) Son's son

Q46. What was the name of the political party formed by Subhash Chandra Bose after he left Congress party?
(a) All India Progressive Bloc
(b) All India Socialist Bloc
(c) Indian National Army
(d) All India Forward Bloc

Q47. Which was the first Indian Institute of Technology (IIT) to be established?
(a) IIT, Kanpur
(b) IIT, Kharagpur
(c) IIT, Bombay
(d) IIT, Delhi

Q48. Who among the following was one of the defense attorneys of the famous 'Sehgal-Dhillon-Shah Nawaz' trials?
(a) Rajendra Prasad
(b) Jawaharlal Nehru
(c) Agha Khan
(d) Pattabhi Sitaramayya

Q49. A number reduced by 37% becomes 315. By what percentage should it be increased so that it becomes 800?
(a) 60%
(b) 65%
(c) 63%
(d) 62%

Q50. Which one of the following is the tallest statue in the world?
(a) 'Statue of Unity' in India
(b) 'Spring Temple Buddha' in China
(c) 'Statue of Liberty' in USA
(d) 'Great Buddha of Thailand' in Thailand

Q51. Which of the following is NOT the Indian research station in Antarctica?
(a) Maitri
(b) Bharati
(c) Dakshin Gangotri
(d) Himalaya

Q52. The ratio of the areas of two triangles is 4 : 3 and the ratio of their heights is 3 : 4. Find the ratio of their bases.
(a) 12 : 7
(b) 14 : 9
(c) 16 : 9
(d) 16 : 3

Q53. In a certain code language, HEART is written as USAFI and CLEANER is written as SFOAFMD. How will SHAMPOO be written as in that language?
(a) PPQMBIT
(b) PPQNBIT
(c) PQQMBIT
(d) TMBMQPP

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Q54. Sabarimala Sri Ayyappa temple is situated in the state of:

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

Q55. 2022 Winter Olympics is scheduled to be held in the city of:

(a) Beijing
(b) Sapporo
(c) Munich
(d) Annecy

Q56. A pendulum strikes 2 times in 3 s, and another pendulum strikes 5 times in 7 s. If both pendulums start striking at the same time, how many simultaneous strikes will take place in 1 min?

(a) 3
(b) 4
(c) 2
(d) 5

Q57. 'Right to Property' was removed from the list of Fundamental Rights by which amendment to the Constitution of India?

(a) 48^(th)
(b) 42^(th)
(c) 44^(th)
(d) 46^(th)

Q58. Rocks which have solidified from molten magma are called:

(a) Phyllite Rocks
(b) Sedimentary Rocks
(c) Igneous Rocks
(d) Metamorphic Rocks

Q59. Who among the following in NOT the founding members of the United Nation?

(a) USA
(b) Germany
(c) Cuba
(d) France

Q60. The ratio between the speeds of two trains is 7 : 5. If the second train runs 400 km in 4 h, then the speed of first train is:

(a) 145 km/h
(b) 142 km/h
(c) 140 km/h
(d) 148 km/h

Q61. Which of the following states has the largest tribal population as per Census 2011?

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

Q62. According to USDA, which of the following countries is the largest producer of rice in the world based on production in year 2019-20?

(a) Thailand
(b) India

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(c) China
(d) Russia

Q63. Who was the first European president of the Indian National Congress?
(a) Annie Besant
(b) George Yule
(c) AO Hume
(d) Alfred Webb

Q64. As per Constitution of India, if for a period of _____ days a member of either House of Parliament is, without permission of the House, absent from all meetings thereof, the House may declare his seat vacant.
(a) 60
(b) 30
(c) 45
(d) 15

Q65. If the Cost price of an article is 40% of its selling price, then what percent is the selling price of its cost price?
(a) 175%
(b) 250%
(c) 150%
(d) 200%

Q66. Which two signs need to be interchanged to make the following equation correct?
9 + 3 - 15 × 5 ÷ 8 = 2
(a) +, -
(b) -, ÷
(c) ×, ÷
(d) ×, +

Q67. Quinine, a common medication for malaria, is extracted from the barks of _____ trees.
(a) Maple
(b) Eucalyptus
(c) Beech
(d) Cinchona

Q68. When did an Indian chief minister hoist the national flag on Independence Day for the first time?
(a) 15^(th) August 1950
(b) 15^(th) August 1947
(c) 15^(th) August 1977
(d) 15^(th) August 1974

Q69. In which of the following regions is Mount Kailash situated?
(a) Tibet
(b) Nepal
(c) Sikkim
(d) Uttarakhand

Q70. Select the number that can replace the question mark (?) in the following equation.
120% of 3125 - 90% of ? = 150
(a) 40
(b) 400
(c) 4000
(d) 3600

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Q71. e-NAM launched by the Government of India in April 2016 is:

(a) the name of a national electronic market
(b) an electronic platform for agriculture market
(c) an electronic registration for business establishments' names
(d) a national portal for e-commerce activities

Q72. What is the scientific name of the fruit mango?

(a) Mangus Indicus
(b) Mangifera Indica
(c) Mangus Indica
(d) Mangana Indica

Q73. When was Purna Swaraj i.e. complete freedom from the British Raj declared by the Indian National Congress?

(a) 15^(th) August 1930
(b) 19^(th) December 1930
(c) 26^(th) January 1930
(d) 15^(th)August 1922

Q74. A and B together can finish a piece of work in 10 days. B and C together can finish it in 15 days. A and C together can finish it in 18 days. In how many days will A, B and C finish it together?

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

Q75. There are three objects X, Y, and Z, that have triangular, square, and pentagonal shapes, have red, green, and blue colours, and are made up of different materials gold, silver, and bronze such that, X is red but not square. Y is made up of silver but it is not green, X is made up of bronze and Z has a pentagonal shape. What is Z made up of?

(a) Gold
(b) Brass
(c) Bronze
(d) Silver

Q76. _____ is the branch of science that aims at improving the genetic quality of human population.

(a) Biotechnology
(b) Genetics
(c) Eugenics
(d) Epigenetics

Q77. Who was the first person to obtain a spectrum by passing light through a prism?

(a) Issac Newton
(b) Pierre Curie
(c) Benjamin Franklin
(d) Paul Villard

Q78. You are given two statements:

1. All balloons are robins.
2. No robin is a glass.

Which of the following conclusions is/are true?

A. All robins are balloons.

B. No balloon is a glass

(a) Only A
(b) Either A or B
(c) Both A and B

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(d) Only B

Q79. Which of the following numbers is NOT prime?

(a) 811
(b) 313
(c) 817
(d) 317

Q80. Which one of the following is defined as 'a program that runs in the background on your computer, sending information about your browsing habits to the company that installed it on your computer'?

(a) Malware
(b) Spyware
(c) Grayware
(d) Adware

Q81. At what rate of simple interest will a sum of money triple itself in 8 years?

(a) 30%
(b) 25%
(c) 35%
(d) 20%

Q82. Which of the following National waterway runs along Coromandal Coast and also through part of Krishna and Godavari river in South India?

(a) National Waterway-4
(b) National Waterway-1
(c) National Waterway-2
(d) National Waterway-3

Q83. In the e-mail address India@solu.edu, India is the:

(a) User name
(b) Password
(c) Domain name
(d) Server name

Q84. If $\cos\theta = \cos\alpha$ then general solution for θ is:

(a) $\theta = 2n\pi \pm \alpha$,n in Z
(b) $\theta = 3n\pi/2 \pm \alpha$,n in Z
(c) $\theta = n\pi/2 + \alpha$,n in Z
(d) $\theta = n\pi \pm \alpha$,n in Z

Q85. Find the highest common factor of 36 and 48.

(a) 12
(b) 6
(c) 8
(d) 18

Q86. If '-' stands for '×', '÷' stands for '-', '×' stands for '+' and '+' stands for '÷', then find the value of 24 + 6 ÷ 2 - 9 × 4

(a) • 10
(b) 8
(c) 24
(d) • 8

Q87. Vicky is taller than Hrithik. Hrithik is taller than Aman. Anil is taller than Abhay. Abhay is taller than Hrithik. Who among them is the shortest?

(a) Anil
(b) Aman

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(c) Abhay
(d) Vicky

Q88. Select the number from among the given options that can replace the question mark (?) in the following series.

30, 42, 56, 72, ?

(a) 90
(b) 100
(c) 88
(d) 81

Q89. W and X are brothers. S is the son of X and Q. R is married to U and is the brother of Q. T and V are the children of U. P is the mother of Q and Y is the mother of X. How is T related to S?

(a) Mother's brother
(b) Father's brother's son
(c) Mother's brother's child
(d) Paternal Uncle

Q90. A, B, C, D, E, and F are six school-going children. A and B are from the Red House and the others are from the Green House. D and F are tall, unlike the others. A, C and D are boys. Which of the following is a tall girl from the Green House?

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

Q91. 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 follows(s) from the statements.

Statements:

Some singers are not dancers. Some dancers are artists. No artist is a magician.

Conclusions:

1. Some singers are artists.
2. Some dancers are not magicians.
3. Some singers are magicians.

(a) Only conclusion 2 follows.
(b) Only conclusion 1 follows.
(c) Both conclusions 1 and 3 follow.
(d) Both conclusions 2 and 3 follow.

Q92. Select the number from among the options given that is related to the fifth number in the same way as the second and fourth numbers are related to the first and third numbers respectively.

11 : 143 :: 13 : 221 :: 7 : ?

(a) 57
(b) 56
(c) 35
(d) 77

Q93. You are given three statements:

1. All blues are bears.
2. All brides are bears.
3. All brides are children.

Which of the following conclusions is/are true?

A. Some children are bears.

B. Some blues are children.

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C. Some blues are brides.

D. Some brides are not children.

(a) All
(b) Only B
(c) Only A
(d) Only C

Q94. Select the letter that can replace the question mark (?) in the following series.

C : X : D : ?

(a) W
(b) X
(c) U
(d) V

Q95. You are given two statements:

1. All rhinos are pigs.

2. Some flies are pigs.

Which of the following conclusions is/are true?

A. No fly is a rhino.

B. Some flies are rhinos

(a) Only B
(b) Neither A nor B
(c) Either A or B
(d) Both A and B

Q96. Select the letter-cluster from among the given options that can replace the question mark (?) in the following series.

SXC, PVB, OTA, LRZ, ?

(a) KPY
(b) MWP
(c) KPP
(d) MXC

Q97. Eight persons P, Q, R, S, T, U, V, and W are going to their destinations Delhi, Mumbai, Chennai, Hyderabad, Goa, Panji, Punjab, and UP (not necessarily in the same order).

Destination of no two persons is same. R is going to Goa. V is not going to Delhi, Mumbai, or Punjab. S and T are going to UP and Panji respectively. P and Q are not going to Punjab or Mumbai. U is not going to Delhi or Mumbai.

Which of the following combination is definitely correct?

(a) W - Delhi
(b) Q - Delhi
(c) W - Mumbai
(d) P - Delhi

Q98. Select the option that can replace the question mark (?) in the following series.

Z5LW, W7OY, T9RB, Q11UF,?

(a) N13XJ
(b) N13XK
(c) N15ZK
(d) N15YK

Q99. Eight persons A to H are sitting at a round table facing its center such that, G is at the immediate left of A and third to the right of D. There are two persons between A and B. C is not the immediate neighbour of B. E and F are adjacent to each other. F is not the immediate neighbour of A and D. C is immediate neighbour of G. Who is second to the left of F?

(a) G

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

Q100. Consider the given statement and decide which of the given assumptions is/are implicit in the statement.

Statement:

Talk to everyone politely even if your social status is high.

Assumptions:

I: Generally, people do not speak politely after gaining high social status.

II: One's social status might decline someday.

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

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (b) Rs. 6,096.38

Given:
Principal (P) = Rs. 4,500
Rate of intetrest (R) = 12% per annum
Time (T) = 2 years and 8 months
Formula Used:
Amount (A) = P (1 + R/100)^T
Calculation:
for the 1st 2 years, rate = 12%
For the next 8 months:
12 months => rate = 12%
So, 8 months => rate = 12/12 × 8 = 8%
Now,
A = 4500 (1 + 12/100)² (1 + 8/100)
=> A = 4500 (1 + 3/25)² (1 + 2/25)
=> A = 4500 × (28/.25)² (27/25)
=> A = 4500 × 28/25 × 28/25 × 17/25
=> A = (180 × 28 × 28 × 27) / 625
=> A = 3810240 / 625 = 6096.38

Hence, the correct answer is option (2).

Q2. Answer: (b) (7, 14, 98, 21)

The logic followed here is:

Logic: Third number = Sum of first two numbers, Fourth number = Product of first two numbers

(8, 15, 23, 120)

→ 23 = 8 + 15

→ 120 = 8 × 15

Let's check each option,

1) (9, 18, 27, 162)

→ 27 = 9 + 18

→ 162 = 9 × 18

2) (7, 14, 98, 21)

→ 98 ≠ 7 + 14

→ 21 ≠ 7 × 14 => Doesn't follow the logic.

3) (12, 5, 17, 60)

→ 17 = 12 + 5

→ 60 = 12 × 5

4) (11, 12, 23, 132)

→ 23 = 11 + 12

→ 132 = 11 × 12

Hence, the correct answer is "Option 2".

Q3. Answer: (c) 14641

Given:

√12321 × √x = 13431

Formula used:

√a × √b = √(a × b)

Calculations:

First, find the square root of 12321:

=> √12321 = 111

Now substitute:

=> 111 × √x = 13431

Divide both sides by 111:

=> √x = 13431/111

=> √x = 121

Square both sides to solve for x:

=> x = 121^2

=> x = 14641

Therefore The value of x is 14641.

Q4. Answer: (b) Bauxite

The correct answer is Bauxite

Key Points

• Bauxite is the principal ore of aluminium.

• It is primarily composed of minerals such as gibbsite, boehmite, and diaspore.

• Bauxite is found in various regions around the world, including Australia, China, and Brazil.

• The extraction of aluminium from bauxite involves a process called the Bayer process.

• Bauxite is also used in the production of refractory materials, abrasives, and chemicals.

Additional Information

• Malachite is an ore of copper.

• Magnetite and Haematite are ores of iron.

• Aluminium is the most abundant metal in the Earth's crust and is widely used in various industries due to its properties such as

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low density, high strength, and resistance to corrosion.

• The discovery of bauxite dates back to 1821, when it was first identified in Les Baux, France.

• Recycling aluminium is energy-efficient and significantly reduces the environmental impact compared to extracting it from bauxite.

Q5. Answer: (a) H3

According to the given information,

1) A is on H4 and is not blue or brown.

2) B is green and is not running on H3 or H5.

Truck	Colour	Highway
A		H4
B	Green	
C		
D		
E		

3) C is blue and is not on H1.

4) D is running on H1 and is not orange or brown.

Truck	Colour	Highway
A		H4
B	Green	
C	Blue	
D	Red	H1
E		

5) E is not running on H5 or H2.

Truck	Colour	Highway
A	Orange	H4
B	Green	H2
C	Blue	H5
D	Red	H1
E	Brown	H3

Here, we can see that E is running on H3 highway.

Hence, the correct answer is "Option 1".

Q6. Answer: (d) 3√5

Given:

$x + 1/x = 7$

Formula used:

$(x + 1/x)^2 = x^2 + 1/(x^2) + 2$

$(x - 1/x)^2 = x^2 + 1/(x^2) - 2$

Calculations:

Square the given equation:

$\Rightarrow (x + 1/x)^2 = 7^2$

$\Rightarrow (x^2 + 1/(x^2) + 2) = 49$

$\Rightarrow x^2 + 1/(x^2) = 49 - 2 = 47$

Now use this to find $(x - 1/x)^2$:

$\Rightarrow (x - 1/x)^2 = x^2 + 1/(x^2) - 2$

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=> $(x - 1/x)^2 = 47 - 2 = 45$

Take the square root:

=> $(x - 1/x) = \sqrt{45}$

=> $(x - 1/x) = 3\sqrt{5}$

Therefore The value of $(x - 1/x)$ is $3\sqrt{5}$.

Q7. Answer: (a) 20

Given:

Number of clips sold for 1 rupee = 16

Profit percentage = 25%

Formula Used:

Cost Price (CP) = Selling Price (SP) / (1 + Profit Percentage)

Calculation:

Selling Price (SP) of 16 clips = 1 rupee

Profit Percentage = 25% = 25/100 = 1/4

Using the formula:

Cost Price (CP) of 16 clips => 1 rupee / (1 + 1/4)

=> CP of 16 clips = 1 / (5/4)

=> CP of 16 clips = 4/5 rupee

So, for 1 rupee, the number of clips = 16 × (5/4)

=> Number of clips = 20

The number of clips he bought for a rupee is 20.

Q8. Answer: (d) 71/17cm

Given:

Base of the right-angled triangle, b = 15 cm

Altitude of the right-angled triangle, a = 8 cm

Formula Used:

1. Hypotenuse, $c = \sqrt{(a^2 + b^2)}$

2. Area of the triangle, Area = (1/2) × a × b

3. Altitude from the opposite vertex to the hypotenuse, h = (2 × Area)/c

Calculation:

First, find the hypotenuse:

=> $c = \sqrt{(8^2 + 15^2)}$

=> $c = \sqrt{(64 + 225)}$

=> $c = \sqrt{(289)}$

=> c = 17 cm

Next, calculate the area of the triangle:

=> Area = (1/2) × 8 × 15

=> Area = (1/2) × 120

=> Area = 60 cm^2

Finally, find the altitude from the opposite vertex to the hypotenuse:

=> h = (2 × 60)/17

=> h = 120/17

=> h ≈ 7.06 cm

The altitude from the opposite vertex to its hypotenuse is approximately 71/17 cm.

Q9. Answer: (c) 6 : 46 : 30

Given:

The traffic lights change after every 35 s, 45 s, and 75 s respectively.

They all change simultaneously at 6:20:15 hours.

Formula Used:

Least Common Multiple (LCM) of the given times.

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Calculation:

To find the time when the lights will change simultaneously again, we need to calculate the LCM of 35, 45, and 75.

Prime factorization:

35 = 5 × 7

45 = 3^2 × 5

75 = 3 × 5^2

LCM = Highest power of all prime factors = 3^2 × 5^2 × 7

LCM = 9 × 25 × 7

LCM = 1575 seconds

Convert 1575 seconds to hours, minutes, and seconds:

1575 ÷ 3600 = 0 hours (remaining seconds: 1575)

1575 ÷ 60 = 26 minutes (remaining seconds: 15)

So, 1575 seconds = 0 hours 26 minutes 15 seconds

Add this to the initial time 6:20:15:

6:20:15 + 0:26:15

=> 6:46:30

The traffic lights will change again simultaneously at 6:46:30 hours.

Q10. Answer: (b) 105

The logic followed here is:

Logic: The numbers are the product of two prime numbers.

Let's check each option,

1) 143: This number is the product of two prime numbers, 11×13.

2) 105: This number can be factored as 3×5×7, it is not the product of only two prime numbers but three prime numbers, making it different from the others.

3) 21: This number is also the product of two prime numbers, 3×7.

4) 65: This number is the product of two prime numbers, 5×13.

Hence, the correct answer is "Option 2".

Q11. Answer: (a) Only conclusion 2 follows.

The least possible venn diagram is shown below,

Conclusions:

1. Some horses are monkeys → False (No horse is a monkey implies that some horses can't be monkeys).

2. Some donkeys are not monkeys → True (All monkeys are donkeys, some donkeys are horses and no horse is a monkey implies that some of those donkeys which are horses are not monkeys).

Hence, the correct answer is "Option 1".

Q12. Answer: (a) United Nations

The correct answer is United Nations

Important Points

• The previous year's paper contained an error. We have corrected the options to reflect accurate information.

Key Points

• The United Nations is not a Bretton Woods Institution.

• The Bretton Woods Institutions include the International Monetary Fund (IMF) and the World Bank.

• These institutions were established in 1944 during the United Nations Monetary and Financial Conference held in Bretton Woods, New Hampshire, USA.

• The World Trade Organization (WTO) is also not a Bretton Woods Institution. It was established later in 1995.

Additional Information

• The International Monetary Fund (IMF) aims to foster global monetary cooperation, secure financial stability, facilitate international trade, promote high employment and sustainable economic growth, and reduce poverty around the world.

• The World Bank provides financial and technical assistance to developing countries for development programs (e.g., bridges, roads, schools, etc.) that are expected to improve the economic prospects and quality of life for people in those countries.

• The United Nations is an international organization founded in 1945. It is currently made up of 193 Member States and is committed to maintaining international peace and security, developing friendly relations among nations, achieving international

cooperation, and being a center for harmonizing the actions of nations.

• The World Trade Organization (WTO) deals with the global rules of trade between nations. Its main function is to ensure that trade flows as smoothly, predictably, and freely as possible.

Q13. Answer: (b) (17 - √5)/2

Given:

$(3 + \sqrt{5})/(3 - \sqrt{5}) + (3 - \sqrt{5})/(3 + \sqrt{5}) + (\sqrt{5} - 1)/(\sqrt{5} + 1)$

Formula used:

$(a + b)/(a - b) + (a - b)/(a + b) = 2 + (4b^2)/(a^2 - b^2)$

Rationalize the denominator for the third term:

$(\sqrt{5} - 1)/(\sqrt{5} + 1) \times (\sqrt{5} - 1)/(\sqrt{5} - 1) = ((\sqrt{5} - 1)^2)/((\sqrt{5})^2 - 1^2)$

Calculations:

Solve the first two terms using the formula:

$\Rightarrow (3 + \sqrt{5})/(3 - \sqrt{5}) + (3 - \sqrt{5})/(3 + \sqrt{5}) = 2 + (4 \times 5)/(9 - 5)$

$\Rightarrow 2 + 20/4 = 2 + 5 = 7$

Now simplify the third term:

$\Rightarrow ((\sqrt{5} - 1)^2)/(5 - 1) = (5 - 2\sqrt{5} + 1)/4 = (6 - 2\sqrt{5})/4 = (3 - \sqrt{5})/2$

Combine the results:

$\Rightarrow 7 + (3 - \sqrt{5})/2$

Express 7 as a fraction with a denominator of 2:

$\Rightarrow 14/2 + (3 - \sqrt{5})/2$

$\Rightarrow (14 + 3 - \sqrt{5})/2 = (17 - \sqrt{5})/2$

Therefore The answer is $(17 - \sqrt{5})/2$.

Q14. Answer: (b) Neither I nor II is implicit.

Given Statement: "From next month, everyone has to pay income tax no matter what your income is" - Government notice said.

Now,

Assumptions:

1. Government Treasury fund is getting short - Not Implicit (The statement does not provide any information regarding the state of the Government Treasury fund.)

2. People of the country have become rich - Not Implicit (The statement does not provide any information about the wealth status of the people.)

Here, Neither assumption I nor II is implicit.

Hence, the correct answer is "Option 2".

Q15. Answer: (d) yellow

The correct answer is yellow

Key Points

• The yellow oval spot in the human eye is known as the macula.

• The macula is responsible for the sharp, detailed central vision that we use for activities like reading and driving.

• It is located near the center of the retina and contains a high concentration of photoreceptor cells, specifically cones, which are crucial for color vision.

• The macula allows us to see fine details and perform tasks that require focused vision.

Additional Information

• The human eye functions by converting light into electrical signals that the brain can interpret as visual images.

• The retina, where the macula is located, is a light-sensitive layer at the back of the eye.

• Damage to the macula can lead to central vision loss, a condition known as macular degeneration.

• Regular eye exams are important for detecting early signs of macular degeneration and other eye conditions.

Q16. Answer: (a) Rajasthan

The correct answer is Rajasthan

Key Points

• Rajasthan was the first Indian state to implement the 'National Policy on Biofuels' approved by the government of India in May 2018.

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• The policy aims to promote the use of biofuels in the country, reducing dependency on fossil fuels and ensuring a cleaner environment.

• Rajasthan's early adoption of this policy demonstrates its commitment to sustainable and eco-friendly energy sources.

• The state has taken several initiatives to encourage the production and use of biofuels, including incentives for farmers and industries.

Additional Information

• Biofuels are derived from renewable biological sources, such as plant materials and animal waste.

• The promotion of biofuels is part of India's broader strategy to enhance energy security, reduce greenhouse gas emissions, and support the rural economy.

• The National Policy on Biofuels classifies biofuels into three categories: Basic Biofuels (First Generation), Advanced Biofuels (Second Generation), and Bio-CNG (Third Generation).

• The policy also outlines the vision for setting up a National Biofuel Coordination Committee to provide policy guidance and support to stakeholders.

• Rajasthan's implementation of the biofuel policy includes the establishment of biofuel refineries and the promotion of biofuel crops like Jatropha.

Q17. Answer: (d) 3/2

Given:

(3 + 4 ÷ 2 × 3)/(4 + 3 × 2 ÷ 3)

Formula used:

Apply BODMAS (Brackets, Orders, Division and Multiplication, Addition and Subtraction) rule.

Calculations:

Simplify the numerator:

=> 3 + 4/2 × 3 = 3 + 2 × 3 = 3 + 6 = 9

Simplify the denominator:

=> 4 + (3 × 2)/3 = 4 + 6/3 = 4 + 2 = 6

Now, divide the simplified numerator by the denominator:

=> 9/6 = 3/2

Therefore The answer is 3/2.

Q18. Answer: (a) (n/3)

Given:

(1 + 1/3)(1 + 1/4)(1 + 1/5)...(1 + 1/(n - 1))

Formula used:

Simplify each term:

1 + 1/k = (k+1)/k

Thus, the expression becomes:

4/3 × 5/4 × 6/5 × ... × n/(n-1)

Calculations:

The terms will cancel out sequentially:

=> n/3

Therefore The value of the expression is (n/3).

Q19. Answer: (c) Hindustan Socialist Republican Association

The correct answer is Hindustan Socialist Republican Association

Key Points

• Hindustan Socialist Republican Association (HSRA) was a revolutionary organization that aimed to overthrow British rule in India.

• Prominent freedom fighters such as Ram Prasad Bismil, Chandrashekhar Azad, and Bhagat Singh were associated with this organization.

• The HSRA was founded in 1928, following the reorganization of the Hindustan Republican Association (HRA).

• The organization was known for its radical approach, including armed struggle and acts of violence against British officials.

• It played a significant role in inspiring young Indians to join the freedom movement and fight for independence.

Additional Information

• The HSRA was initially formed as the Hindustan Republican Association (HRA) in 1924 by revolutionaries like Ram Prasad Bismil, Ashfaqulla Khan, and Sachindra Nath Sanyal.

• In 1928, the HRA was reorganized and renamed HSRA to emphasize its socialist orientation and commitment to achieving independence through revolutionary means.

• One of the most notable actions of HSRA was the Kakori Train Robbery in 1925, which aimed to fund their activities by stealing money from the British government.

• Bhagat Singh, a key member of the HSRA, is remembered for his role in the Lahore Conspiracy Case and his execution in 1931, which galvanized the Indian independence movement.

• The legacy of HSRA continues to inspire contemporary movements and the youth of India in their pursuit of justice and freedom.

Q20. Answer: (d) Dr. Gagandeep Kang

The correct answer is Dr. Gagandeep Kang

Key Points

• Dr. Gagandeep Kang became the first Indian woman to be elected to the Fellow of the Royal Society (FRS) in April 2019.

• She is a renowned clinical scientist and a leading researcher in enteric infections, particularly in children.

• Her election to the FRS is a significant milestone for Indian science and highlights her contributions to public health.

• Dr. Kang has been instrumental in the development of the rotavirus vaccine, which is crucial for preventing severe diarrheal disease in children.

Additional Information

• The Fellow of the Royal Society (FRS) is one of the most prestigious scientific honors, recognizing individuals who have made substantial contributions to the improvement of natural knowledge.

• The Royal Society is a fellowship of many of the world's most eminent scientists and is the oldest scientific academy in continuous existence, founded in 1660.

• Dr. Kang's election to the FRS underscores the global impact of her research and her dedication to improving health outcomes in low-income settings.

• She has also played a significant role in mentoring young scientists and promoting scientific research in India.

Q21. Answer: (b) 15/16

The logic is here:

Numerators: start 5 and add 5 each term → 5, 10, 15, 20, 25, 30, 35, 40

Denominators: start 1 and multiply by 2 each term → 1, 2, 4, 8, 16, 32, 64, 128

Hence, The missing number is 15/16.

Q22. Answer: (a) Voter Verifiable Paper Audit Trail

The correct answer is Voter Verifiable Paper Audit Trail

Key Points

• VVPAT stands for Voter Verifiable Paper Audit Trail.

• It is a method of providing feedback to voters using a ballotless voting system.

• VVPAT is used in Indian elections to ensure that the citizen's vote has been correctly placed.

• The machine generates a paper slip with the name of the candidate for whom the vote was cast, allowing the voter to verify their vote.

• This paper slip is then deposited into a sealed box, which can be used later for cross-verification and auditing purposes.

Additional Information

• VVPAT was first used in a by-election in Nagaland in 2013 and later in the general elections in 2014.

• The introduction of VVPAT has added an extra layer of transparency and trust in the electoral process.

• The system is intended to detect possible election fraud or malfunction and provide a means to audit the stored electronic results.

• VVPAT slips are counted in a randomly selected polling station in each Assembly constituency to cross-check the electronic results.

Q23. Answer: (d) Kathak

The correct answer is Kathak

Key Points

• Kathak is one of the eight major forms of Indian classical dance.

• This dance form traces its origins to the nomadic bards of ancient northern India, known as Kathakars or storytellers.

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• During the Mughal era, Kathak evolved to include intricate footwork, spins, and expressive gestures influenced by Persian and Mughal cultures.

• The dance is characterized by its intricate footwork and spins, which are performed to the accompaniment of classical Hindustani music.

• Kathak dancers traditionally wear elaborate costumes that are reflective of Mughal influences, including heavy jewelry and embroidered dresses.

Additional Information

• Mohiniyattam is a classical dance form from Kerala, known for its graceful movements and feminine style.

• Kathakali is another classical dance from Kerala, noted for its elaborate costumes and dramatic storytelling.

• Bharatanatyam is a classical dance from Tamil Nadu, characterized by its fixed upper torso, bent legs, and intricate footwork.

• While these other dance forms have their own unique histories and styles, it is Kathak that prominently reflects the influence of Mughal tradition.

Q24. Answer: (d) 7√3 cm

Given:

Radius of the circumscribed circle = 7 cm.

Formula Used:

For an equilateral triangle, the radius (R) of the circumscribed circle is related to the side length (a) by the formula:

R = a/√3

Calculation:

Given radius R = 7 cm

Using the formula:

7 = a/√3

Solving for a:

=> a = 7 × √3

The length of the side of the equilateral triangle is 7 √3 cm.

Q25. Answer: (c) 8.38

Given:

Numbers: 6.7, 7.2, 8.7, 9.2, 10.1

Formula used:

Mean = (Sum of all numbers) / (Total number of observations)

Calculation:

Sum = 6.7 + 7.2 + 8.7 + 9.2 + 10.1 = 41.9

Number of observations = 5

Mean = 41.9 / 5 = 8.38

Therefore The mean of the given data is 8.38.

Q26. Answer: (d) 60H

The logic followed here is,

Hence, the correct answer is "Option 4".

Q27. Answer: (d) 49/150

Given :-

1/1.4 + 1/4.7 + 1/7.10 + ... + 1/47.50.

Calculation :-

1/1.4 + 1/4.7 + 1/7.10 + ... + 1/47.50.

we multiply by 3 both numerator and denominator

1/3[3/1.4 + 3/4.7 + 3/7.10 + ... + 3/47.50.]

Now,

1/3[1 - 1/4 + 1/4 - 1/7 + 1/7 - 1/10 + ... + 1/47 - 1/50]

1/3[1 - 1/50]

1/3 × 49/50 = 49/150

Q28. Answer: (a) 133 : 117

Given :-

(m + n) : (m - n) = 7 : 3

Concept Use :-

Using componendo and dividendo

if a/b = c/d then

(a+b)/(a-b) = (c+d)/(c-d)

Calculation :-

(m + n) : (m - n) = 7 : 3

=> (m+n+m-n)/(m-n-m+n) = (7+3)/(7-3)

=> m/n = 10/4

=> m/n = 5/2

Now, cube of both side

=> $m^3/n^3 = 5^3/2^3$

=> m3/n^3 = 125/8

Now,

(m3 + n3) : (m3 - n3) = (125 + 8) : (125 - 8) = 133/117

(m3 + n3) : (m3 - n3) = 133/117

Q29. Answer: (c) Acrobat Reader

The correct answer is Acrobat Reader

Key Points

• Acrobat Reader is not a part of Microsoft Office suite.

• Microsoft Office includes applications such as Word, PowerPoint, Excel, and others primarily used for productivity tasks.

• Acrobat Reader is a product of Adobe Systems and is used for viewing, printing, and annotating PDF documents.

• Microsoft Office applications are designed to work seamlessly together, whereas Acrobat Reader is a standalone application for PDF files.

Additional Information

• Microsoft Word is a word processing application used for creating and editing documents.

• Microsoft PowerPoint is a presentation program used for creating slideshows.

• Microsoft Excel is a spreadsheet application used for data analysis and visualization.

• The Microsoft Office suite has been a leading productivity software package for decades.

• Adobe Acrobat Reader is frequently used in conjunction with office software but is not a component of the Microsoft Office suite.

Q30. Answer: (c) 103

The logic followed here is,

Hence, the correct answer is "Option 3".

Q31. Answer: (c) MFUPIUKAE

The logic followed here is,

COCKROACH is written as CPENVRCDH,

SCOOTER is written as SDQRVFR,

Similarly,

MESMERIZE can be written as,

Hence, the correct answer is "Option 3".

Q32. Answer: (b) Kalpakkam - Karnataka

The correct answer is Kalpakkam - Karnataka

Key Points

• Kakrapar is located in Gujarat.

• Kalpakkam is located in Tamil Nadu, not Karnataka.

• Kudankulam is located in Tamil Nadu.

• Kaiga is located in Karnataka.

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• Therefore, the incorrect match is Kalpakkam - Karnataka.

Additional Information

• Kakrapar Atomic Power Station (KAPS) is situated in the state of Gujarat.

• Madras Atomic Power Station (MAPS), also known as Kalpakkam, is situated in Tamil Nadu.

• Kudankulam Nuclear Power Plant (KKNPP) is located in the Tirunelveli district of Tamil Nadu.

• Kaiga Generating Station (KGS) is situated near the river Kali in Karnataka.

Q33. Answer: (c) Mumbai

The correct answer is Mumbai

Key Points

• The National Museum of Indian Cinema was inaugurated in January 2019 in Mumbai.

• The museum aims to showcase the history of Indian cinema and its impact on social and cultural evolution.

• It is located at the Films Division Complex on Peddar Road in South Mumbai.

• The museum features interactive displays, memorabilia, and digital installations that trace the journey of Indian cinema from its inception to the present day.

• The museum is divided into two buildings: the New Museum Building and the Gulshan Mahal, a 19th-century heritage bungalow.

Additional Information

• The National Museum of Indian Cinema is a tribute to the rich legacy and vibrant history of Indian cinema.

• The museum provides an educational experience for visitors, including students, researchers, and cinema enthusiasts.

• The museum also hosts various film screenings, workshops, and seminars to promote the understanding and appreciation of Indian cinema.

• It serves as a significant cultural landmark and a tourist attraction in Mumbai.

• The museum was inaugurated by the Honorable Prime Minister of India, Narendra Modi, on January 19, 2019.

Q34. Answer: (a) Goods and Services Tax(GST)

The correct answer is Goods and Services Tax(GST)

Key Points

• Goods and Services Tax (GST) is NOT an instrument of the monetary policy of the Reserve Bank of India (RBI).

• GST is a comprehensive indirect tax on the manufacture, sale, and consumption of goods and services throughout India.

• The primary objective of GST is to consolidate multiple indirect taxes into a single tax to simplify the taxation process and ensure a uniform tax rate across the country.

• On the other hand, the instruments of the monetary policy of the RBI include the Cash Reserve Ratio (CRR), Statutory Liquidity Ratio (SLR), and Bank Rate, which are used to control the money supply and interest rates in the economy.

Additional Information

• The Reserve Bank of India (RBI) is the central banking institution of India, which controls the monetary policy of the Indian rupee.

• The RBI was established on 1st April 1935 and was nationalized on 1st January 1949.

• The primary functions of the RBI include regulating the issue of banknotes, maintaining reserves to secure monetary stability, and operating the credit and currency system of the country to its advantage.

• Monetary policy involves the management of money supply and interest rates by the central bank to control inflation and stabilize the currency.

• Other tools of monetary policy include Open Market Operations (OMO) and the Marginal Standing Facility (MSF).

Q35. Answer: (c) Igor Stimac

The correct answer is Igor Stimac

Key Points

• Igor Stimac is the current coach of the Indian men's football team as of December 2020.

• He was appointed as the head coach of the Indian national team in May 2019.

• Igor Stimac is a former Croatian footballer who has played for and managed several clubs and national teams.

• Under his coaching, the Indian football team has seen various improvements and strategic changes.

Additional Information

• Stephen Constantine was the previous coach of the Indian men's football team before Igor Stimac.

• The Indian football team, under Igor Stimac, aims to qualify for major international tournaments and improve its FIFA ranking.

• Igor Stimac has a rich history in football, having been part of the Croatian national team that finished third in the 1998 FIFA World Cup.

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• He has also managed various clubs in Europe and Asia, bringing a wealth of experience to the Indian football team.

Q36. Answer: (c) State Goods & Service Tax

The correct answer is State Goods & Service Tax

Key Points

• State Goods & Service Tax (SGST) is a component of the Goods and Services Tax (GST) in India.

• SGST is levied by the state government on intra-state transactions of goods and services.

• It is one of the three components of GST, the other two being Central Goods & Service Tax (CGST) and Integrated Goods & Service Tax (IGST).

• The revenue collected from SGST is solely for the respective state government.

• SGST replaces multiple state taxes such as Value Added Tax (VAT), Central Sales Tax (CST), Purchase Tax, and others.

Additional Information

• The GST framework in India was implemented on 1st July 2017.

• It aims to create a single, unified market by subsuming multiple indirect taxes previously levied by both central and state governments.

• GST is governed by a GST Council, which is chaired by the Union Finance Minister and includes the finance ministers of all the states.

• The introduction of GST is considered one of the most significant tax reforms in India.

• It enhances the ease of doing business and ensures a seamless flow of tax credit.

Q37. Answer: (b) 9.06

Given:

Mode = 7.52

Mean = 9.83

This is a moderately asymmetrical distribution.

Formula Used:

For a moderately asymmetrical distribution, the relationship between mean, median, and mode is given by:

Mean - Mode ≈ 3(Mean - Median)

Calculation:

Substitute the given values into the formula:

Mean - Mode = 3(Mean - Median)

9.83 - 7.52 = 3(9.83 - Median)

2.31 = 3(9.83 - Median)

Divide both sides by 3:

2.31 / 3 = 9.83 - Median

0.77 = 9.83 - Median

Rearrange to solve for Median:

=> Median = 9.83 - 0.77

=> Median = 9.06

The median of the distribution is 9.06.

Q38. Answer: (b) 6

Given :-

5X1 + 6Y7 + 3Z3 = 1471

Concept use :-

sum of unit place digit is 11 and carry 1

x + y + z + 1 = 7 [here, 1 is carry]

x + y + z = 6

Now,

a/c to question highest value of x we take y = 0 & z = 0

x = 6

Highest value of x : 6

Q39. Answer: (d) Only assumption I is implicit.

Given Statement: If you don't follow traffic rules, you will be fined.

Now,

Assumptions:

1. People may start following rules to avoid fine - Implicit (People are likely to follow traffic rules to avoid being fined as the statement suggests a consequence for not following the rules)

2. Traffic rules are for people's safety - Not Implicit (The statement does not explicitly mention that the traffic rules are for safety, it only mentions the consequence of not following them)

Here, Only assumption I is implicit.

Hence, the correct answer is "Option 4".

Q40. Answer: (b) 27/9 h

Given:

Speed of the bullet train is 35% more than that of the electric train.

Time taken by the electric train = 3 hours 45 minutes = 3.75 hours.

Formula Used:

Time = Distance / Speed

Calculation:

Let the speed of the electric train be S mph.

Speed of the bullet train = S + 0.35S = 1.35S mph.

Time taken by the electric train to cover the distance = 3.75 hours.

Distance covered by the electric train = S × 3.75 miles.

Time taken by the bullet train to cover the same distance:

Let the time taken by the bullet train be T hours.

Distance = Speed × Time

Distance = 1.35S × T

Since the distances are the same:

S × 3.75 = 1.35S × T

=> 3.75 = 1.35T

=> T = 3.75 / 1.35

=> T = 375 / 135

=> T = 25 / 9

=> T = 2 ^7/9 hours

The time taken by the bullet train to cover the same distance is 27/9 hours.

Q41. Answer: (c) 20º

Given:

The interior angles of a pentagon are in the ratio 1 : 3 : 5 : 7 : 11.

Formula Used:

Sum of interior angles of a pentagon = (n - 2) × 180^º, where n is the number of sides.

Calculation:

For a pentagon, n = 5.

Sum of interior angles = (5 - 2) × 180^º

Sum of interior angles = 3 × 180^º

Sum of interior angles = 540^º

Let the angles be x, 3x, 5x, 7x, and 11x.

Sum of these angles = x + 3x + 5x + 7x + 11x

Sum of these angles = 27x

=> 27x = 540^º

=> x = 540^º / 27

=> x = 20^º

The measure of the smallest interior angle is 20^º.

Q42. Answer: (d) • 12/13

Given :-

tan θ = - 12/5

Formula used :-

tanθ = p/b

sinθ = p/h

h = √ p²+b²

Calculation :-

tan θ = - 12/5

p = -12

b = 5

h = √ (-12)² + (5)²

h = 13

Now,

sinθ = p/h = -12/13

Q43. Answer: (b) State Bank of India

The correct answer is State Bank of India

Key Points

• State Bank of India (SBI) is the largest commercial bank in India.

• SBI is a government-owned corporation with its headquarters in Mumbai, Maharashtra.

• It offers a wide range of banking products and services to its customers, including personal banking, corporate banking, and international banking.

• SBI has the largest branch network in India, with over 22,000 branches and 58,000 ATMs.

• It also has a significant international presence with branches in numerous countries around the world.

Additional Information

• SBI was established in 1955 after the nationalization of the Imperial Bank of India.

• It is one of the oldest banks in India, tracing its roots back to the Bank of Calcutta, which was established in 1806.

• SBI plays a crucial role in the Indian economy, providing financial services to millions of customers, including individuals, businesses, and government entities.

• The bank is also involved in various social and community development initiatives, contributing to the economic growth and development of the country.

• SBI has consistently been ranked among the top banks in India and has received numerous awards for its performance and customer service.

Q44. Answer: (c) 2.45^(___)

Given:

The sum of 3.2626... - 2.1414... + 1.3333...

Formula used:

Convert each repeating decimal to fractional form:

3.2626... = 323/99

2.1414... = 212/99

1.3333... = 132/99

Calculations:

Add the fractions:

=> 323/99 - 212/99 + 132/99 = (323 - 212 + 132)/99

=> 243/99 = 2.4545...

Therefore The sum is 2.45^(___)

.

Q45. Answer: (d) Son's son

Preparing the family tree using the following symbols,

The family tree can be drawn as per the given information,

Here, we can see that O is the Son's son of W.

Hence, the correct answer is "Option 4".

Q46. Answer: (d) All India Forward Bloc

The correct answer is All India Forward Bloc

Key Points

• All India Forward Bloc was the political party formed by Subhash Chandra Bose after he left the Indian National Congress.

• The party was established in 1939 with the aim to consolidate the political left and to bring about a radical change in the Indian freedom struggle.

• Subhash Chandra Bose, a prominent leader in the Indian independence movement, sought to unify the various leftist groups under one banner to fight against British colonial rule.

• The All India Forward Bloc played a significant role in the Indian independence movement, advocating for complete and immediate independence from British rule.

Additional Information

• Subhash Chandra Bose was known for his strong advocacy for armed struggle against the British Empire, differing from the non-violent approach of Mahatma Gandhi.

• He later formed the Indian National Army (INA) to fight against British forces during World War II with the support of Japan.

• The All India Forward Bloc continues to exist as a political party in India, advocating for socialist policies and preserving the legacy of Subhash Chandra Bose.

Q47. Answer: (b) IIT, Kharagpur

The correct answer is IIT, Kharagpur

Key Points

• IIT, Kharagpur was the first Indian Institute of Technology (IIT) to be established.

• It was established in 1951 and is located in Kharagpur, West Bengal.

• IIT Kharagpur was the first of the IITs to be established and is recognized as an Institute of National Importance.

• The establishment of IIT Kharagpur was based on the recommendations of the Sarkar Committee, which was formed to consider the establishment of higher technical institutions in India.

• Over the years, IIT Kharagpur has grown into one of the premier engineering institutions in India, offering a wide range of undergraduate, postgraduate, and doctoral programs.

Additional Information

• The Indian Institutes of Technology (IITs) are autonomous public technical and research universities located across India.

• They are governed by the Institutes of Technology Act, 1961, which has declared them as institutions of national importance.

• The IIT system has 23 institutes, and it is known for its high academic standards and significant contributions to technology and engineering education in India.

• The IITs are known for their rigorous selection process, which includes the Joint Entrance Examination (JEE) - one of the most challenging engineering entrance exams in the world.

• Graduates from IITs are highly sought after by employers worldwide, and many have gone on to achieve significant success in various fields.

Q48. Answer: (b) Jawaharlal Nehru

The correct answer is Jawaharlal Nehru

Key Points

• Jawaharlal Nehru was one of the defense attorneys in the famous 'Sehgal-Dhillon-Shah Nawaz' trials.

• The trials involved officers of the Indian National Army (INA) who were charged with treason against the British Empire.

• Nehru, along with other prominent leaders, took a stand to defend the INA officers, showcasing his commitment to India's independence movement.

• The trials garnered significant public attention and were instrumental in galvanizing support for the INA and the broader struggle for independence.

Additional Information

• The Sehgal-Dhillon-Shah Nawaz trials are also known as the Red Fort Trials as they were held at the Red Fort in Delhi.

• The trials took place in 1945-46 and were a pivotal moment in the Indian freedom struggle.

• These trials highlighted the sacrifices of the INA soldiers and brought to light the atrocities committed by the British colonial authorities.

• The defense team also included renowned lawyers like Bhulabhai Desai and Tej Bahadur Sapru.

• The public outcry and nationalist sentiments generated by these trials contributed significantly to the eventual withdrawal of British rule from India.

Q49. Answer: (a) 60%

Given:

The number reduced by 37% becomes 315.

Formula Used:

Original Number = Reduced Number / (1 - Reduction Percentage)

Required Increase Percentage = ((Target Number - Original Number) / Original Number) × 100

Calculation:

Let the original number be x.

Reduction Percentage = 37% = 0.37

Reduced Number = 315

Original Number:

=> x = 315 / (1 - 0.37)

=> x = 315 / 0.63

=> x = 500

Target Number = 800

Required Increase Percentage:

=> Increase = 800 - 500 = 300

=> Increase Percentage = 300 / 500 × 100

=> Increase Percentage = 60%

The number should be increased by 60% to become 800.

Q50. Answer: (a) 'Statue of Unity' in India

The correct answer is 'Statue of Unity' in India

Key Points

• The 'Statue of Unity' in India is the tallest statue in the world, standing at a height of 182 meters (597 feet).

• It is a statue of Indian statesman and independence activist Sardar Vallabhbhai Patel, who was the first Deputy Prime Minister and Home Minister of independent India.

• The statue is located on the Narmada River in the state of Gujarat, India.

• It was inaugurated on 31st October 2018 by the Prime Minister of India, Narendra Modi, on the occasion of Patel's 143rd birth anniversary.

• The project was designed by Indian sculptor Ram V. Sutar and the construction was completed by Larsen & Toubro, an Indian multinational conglomerate.

Additional Information

• The Spring Temple Buddha in China, which previously held the record, is the second tallest statue, standing at a height of 128 meters (420 feet).

• The Statue of Liberty in the USA is much shorter, with a height of 93 meters (305 feet) including its pedestal.

• The Great Buddha of Thailand stands at a height of 92 meters (302 feet) and is the tallest statue in Thailand.

• The Statue of Unity has become a major tourist attraction, drawing visitors from all over the world.

• The statue is part of a larger complex that includes a museum and an exhibition hall dedicated to Sardar Patel's life and contributions to India.

Q51. Answer: (d) Himalaya

The correct answer is Himalaya

Key Points

• Maitri, Bharati, and Dakshin Gangotri are the three Indian research stations in Antarctica.

• Maitri was commissioned in 1989 and is located in Queen Maud Land.

• Bharati was commissioned in 2012 and is located in Larsmann Hill.

• Dakshin Gangotri was the first Indian research station in Antarctica, established in 1983, but now it is used only as a supply base.

• Himalaya is not an Indian research station in Antarctica; it is a mountain range in Asia.

Additional Information

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• India's Antarctic program is managed by the National Centre for Polar and Ocean Research (NCPOR), under the Ministry of Earth Sciences.

• The objective of the Indian Antarctic program is to conduct scientific research and surveys in various disciplines such as geology, oceanography, and meteorology.

• India is a signatory to the Antarctic Treaty System, which regulates international relations with respect to Antarctica to ensure that it is used for peaceful purposes and scientific research.

Q52. Answer: (c) 16 : 9

Given:

The ratio of the areas of two triangles = 4 : 3

The ratio of their heights = 3 : 4

Formula Used:

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

Calculation:

Let the base and height of the first triangle be b1b1b1b1b1 and h1h1h1[Math Processing Error]h1h1 respectively, and the base and height of the second triangle be b2b2b2[Math Processing Error]b2b2 and h2h2h2[Math Processing Error]h2h2 respectively.

Given the ratio of the areas:

Area1/Area2 = 4/3

Also given the ratio of the heights:

h1/h2 = 3/4

Using the area formula for both triangles:

(1/2 × b1 × h1)/(1/2 × b2 × h2) = 4/3

=> (b1 × h1)/(b2 × h2) = 4/3

Substitute the given height ratio:

(b1 × 3/4 h2)/(b2 × h2) = 4/3

=> (b1 × 3)/(4 b2) = 4/3

=> b1/b2 = (4 × 4)/(3 × 3)

=> b1/b2 = 16/9

The ratio of their bases is 16 : 9.

Q53. Answer: (a) PPQMBIT

The logic followed here is,

HEART is written as USAFI,

CLEANER is written as SFOAFMD,

Similarly,

SHAMPOO can be written as,

Hence, the correct answer is "Option 1".

Q54. Answer: (b) Kerala

The correct answer is Kerala

Key Points

• The Sabarimala Sri Ayyappa temple is one of the most prominent and ancient temples in India.

• It is located in the Pathanamthitta district of Kerala.

• The temple is dedicated to Lord Ayyappa, and it attracts millions of devotees every year, especially during the Mandala season (November to January).

• It is situated on a hilltop at an altitude of about 1260 meters above sea level, surrounded by dense forests and mountains.

• The temple is known for its strict pilgrimage rituals and practices, including the 41-day vratham (penance) that devotees must observe before visiting.

• Women of menstruating age (10-50 years) were traditionally not allowed to enter the temple, a practice that has been subject to legal and social debates in recent years.

Additional Information

• Kerala is known for its rich cultural heritage and is often referred to as "God's Own Country".

• The state is famous for its backwaters, ayurvedic treatments, and vibrant festivals.

• Kerala has the highest literacy rate in India and is known for its progressive social indicators.

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• It is bordered by Karnataka to the north, Tamil Nadu to the east and south, and the Arabian Sea to the west.

Q55. Answer: (a) Beijing

The correct answer is Beijing

Key Points

• The 2022 Winter Olympics is scheduled to be held in the city of Beijing.

• Beijing will make history as the first city to host both the Summer (2008) and Winter (2022) Olympic Games.

• The decision was made by the International Olympic Committee (IOC) during the 128th IOC Session in Kuala Lumpur, Malaysia, on July 31, 2015.

• The event will feature 109 events across 15 disciplines in 7 sports.

• Beijing's hosting of the Winter Olympics is expected to further promote winter sports in China and across Asia.

Additional Information

• The Winter Olympics is a major international sporting event held once every four years for sports practiced on snow and ice.

• The first Winter Olympics was held in Chamonix, France, in 1924.

• The 2022 Winter Olympics will run from February 4 to February 20, 2022.

• Beijing's iconic National Stadium, also known as the Bird's Nest, will host the opening and closing ceremonies.

• The main competition zones will be in central Beijing, Yanqing, and Zhangjiakou.

Q56. Answer: (c) 2

Given:

Pendulum 1: 2 strikes in 3 seconds

Pendulum 2: 5 strikes in 7 seconds

Step 1: Find the time for 1 strike for both pendulums.

Time per strike for Pendulum 1 = 3 / 2 = 1.5 seconds

Time per strike for Pendulum 2 = 7 / 5 = 1.4 seconds

Step 2: Find the Least Common Multiple (LCM) of 1.5 seconds and 1.4 seconds.

LCM of 1.5 and 1.4 is 21 seconds.

Step 3: Calculate the number of simultaneous strikes in 1 minute (60 seconds).

Time for simultaneous strikes = 21 seconds

In 1 minute (60 seconds), the number of simultaneous strikes = 60 / 21 ≈ 2 times

Therefore The number of simultaneous strikes in 1 minute is 2.

Q57. Answer: (c) 44^(th)

The correct answer is 44th amendment

Key Points

• The 44th amendment to the Constitution of India removed the Right to Property from the list of Fundamental Rights.

• The Right to Property was initially a fundamental right under Article 31 of the Indian Constitution.

• This amendment was enacted in 1978 during the tenure of the Janata Party government.

• After the amendment, the Right to Property was made a legal right under Article 300A of the Indian Constitution.

• This change was significant as it allowed the government to acquire private property for public purposes without it being challenged as a violation of Fundamental Rights.

Additional Information

• The Constitution of India was adopted by the Constituent Assembly on 26th November 1949 and came into effect on 26th January 1950.

• It lays down the framework defining fundamental political principles, establishes the structure, procedures, powers, and duties of government institutions, and sets out fundamental rights, directive principles, and the duties of citizens.

• The Constitution of India is the longest written constitution of any country in the world.

• It declares India a sovereign, socialist, secular, and democratic republic, assuring its citizens justice, equality, and liberty, and endeavors to promote fraternity.

• The Seventh Schedule of the Constitution contains three lists which delineate the subjects under the Union, State, and Concurrent lists.

• Amendments to the Constitution can be made through a process outlined in Article 368.

• The Union List has been amended several times to meet the evolving needs of the nation.

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Q58. Answer: (c) Igneous Rocks

The correct answer is Igneous Rocks

Key Points

• Igneous Rocks are formed from the solidification of molten magma.

• They are one of the three main types of rocks, along with sedimentary and metamorphic rocks.

• Examples of igneous rocks include granite, basalt, and pumice.

• These rocks are primarily classified based on their mineral composition and texture.

Additional Information

• Igneous rocks can be further classified into intrusive and extrusive types based on where the molten magma solidifies.

• Intrusive igneous rocks form below the Earth's surface, while extrusive igneous rocks form at the surface.

• The word "igneous" comes from the Latin word "ignis," meaning fire, indicative of their fiery origin.

• Igneous rocks play a crucial role in the rock cycle, contributing to the formation of other rock types through weathering and erosion.

• They are commonly used in construction due to their durability and strength.

Q59. Answer: (b) Germany

The correct answer is Germany

Key Points

• Germany is not a founding member of the United Nations.

• The United Nations was established on 24 October 1945, following the end of World War II, with the aim of preventing future conflicts and fostering international cooperation.

• The original founding members of the United Nations include countries such as the USA, France, the Soviet Union, and China, among others.

• Germany joined the United Nations much later, becoming a member on 18 September 1973.

Additional Information

• The United Nations is an international organization founded in 1945 and currently made up of 193 Member States.

• The mission and work of the United Nations are guided by the purposes and principles contained in its founding Charter.

• The UN has evolved over the years to keep pace with a rapidly changing world.

• Its work touches every corner of the globe and includes maintaining international peace and security, protecting human rights, delivering humanitarian aid, promoting sustainable development, and upholding international law.

Q60. Answer: (c) 140 km/h

Given:

The ratio between the speeds of two trains = 7 : 5

Speed of the second train = 400 km / 4 h = 100 km/h

Formula Used:

If the speed ratio of two trains is a : b and the speed of the second train is given, then the speed of the first train is calculated as:

Speed of first train = (Speed of second train × a) / b

Calculation:

Speed of the second train = 100 km/h

Speed ratio a : b = 7 : 5

Speed of first train = (100 × 7) / 5

=> Speed of first train = 700 / 5

=> Speed of first train = 140 km/h

The speed of the first train is 140 km/h.

Q61. Answer: (d) Madhya Pradesh

The correct answer is Madhya Pradesh

Key Points

• Madhya Pradesh has the largest tribal population in India as per Census 2011.

• Tribal population in Madhya Pradesh is approximately 21.1% of the state's total population.

• The state is home to several major tribes including the Bhils, Gonds, and Oraons, among others.

• Madhya Pradesh has a rich tribal culture and heritage, which is reflected in its festivals, traditions, and arts.

Additional Information

• Odisha has the second largest tribal population in India.

• The Census of India is conducted every ten years, with the most recent one being in 2011 and the next scheduled for 2021.

• Tribal communities in India are provided with various benefits and reservations under the Indian Constitution to promote their development and welfare.

• Madhya Pradesh also has the highest number of tribal districts in India.

Q62. Answer: (c) China

The correct answer is China

Key Points

• China is the largest producer of rice in the world based on production in the year 2019-20, according to the USDA.

• China's rice production is significantly higher than that of other major rice-producing countries such as India, Thailand, and Russia.

• Rice is a staple food in China and plays a crucial role in the country's agriculture and economy.

• The favorable climate and advanced agricultural practices contribute to China's high rice production.

Additional Information

• Rice is a key agricultural commodity and is grown in many countries around the world.

• India is the second-largest producer of rice, followed by other countries like Indonesia, Bangladesh, and Vietnam.

• Rice production is influenced by various factors including climate, soil fertility, water availability, and farming techniques.

• Advancements in agricultural technology and practices have significantly increased rice yields over the years.

Q63. Answer: (b) George Yule

The correct answer is George Yule

Key Points

• George Yule was the first European president of the Indian National Congress.

• He was elected as the president in the year 1888.

• The Indian National Congress was founded in 1885 by A.O. Hume, Dadabhai Naoroji, and others.

• George Yule's presidency marked a significant moment as it showed the inclusiveness and broad appeal of the Congress during the British rule in India.

• Yule was a businessman and had served as the President of the Bengal Chamber of Commerce.

Additional Information

• Annie Besant was the first woman president of the Indian National Congress, elected in 1917.

• A.O. Hume was one of the founders of the Indian National Congress but never served as its president.

• Alfred Webb was another European who served as the president of the Indian National Congress, elected in 1894.

• The Indian National Congress played a crucial role in the Indian independence movement against British rule.

• Over the years, the Congress has had many prominent leaders who have significantly contributed to India's political landscape.

Q64. Answer: (a) 60

The correct answer is 60 days

Key Points

• As per the Constitution of India, if a member of either House of Parliament is absent for a period of 60 days without permission, the House may declare their seat vacant.

• This provision ensures that members are regular in attending the sessions and fulfilling their parliamentary duties.

• The rule is aimed at maintaining the efficiency and effectiveness of parliamentary proceedings.

• The absence is calculated based on the actual sitting days of the House, not calendar days.

Additional Information

• The Constitution of India was adopted by the Constituent Assembly on 26th November 1949 and came into effect on 26th January 1950.

• It lays down the framework defining fundamental political principles, establishes the structure, procedures, powers, and duties of government institutions, and sets out fundamental rights, directive principles, and the duties of citizens.

• The Constitution of India is the longest written constitution of any country in the world.

• It declares India a sovereign, socialist, secular, and democratic republic, assuring its citizens justice, equality, and liberty, and endeavors to promote fraternity.

• The Seventh Schedule of the Constitution contains three lists which delineate the subjects under the Union, State, and

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Concurrent lists.

• Amendments to the Constitution can be made through a process outlined in Article 368.

• The Union List has been amended several times to meet the evolving needs of the nation.

Q65. Answer: (b) 250%

Given:

Cost price (CP) = 40% of Selling Price (SP)

Formula Used:

Selling Price (SP) as a percentage of Cost Price (CP) = (SP / CP) × 100

Calculation:

Let Selling Price (SP) = 100 units.

Cost Price (CP) = 40% of SP = 40 units.

Selling Price as a percentage of Cost Price = (SP / CP) × 100

=> Selling Price as a percentage of Cost Price = (100 / 40) × 100

=> Selling Price as a percentage of Cost Price = 2.5 × 100

=> Selling Price as a percentage of Cost Price = 250%

The selling price is 250% of its cost price.

Q66. Answer: (b) -, ÷

Given equation: 9 + 3 - 15 × 5 ÷ 8 = 2

Let's check each option,

1) +, -

→ 9 - 3 + 15 × 5 ÷ 8 = 2

→ 9 - 3 + 15 × 5/8 = 2

→ 9 - 3 + 9.3 = 2

→ 18.3 - 3 = 2

→ 15.3 ≠ 2

→ LHS ≠ RHS

2) -, ÷

→ 9 + 3 ÷ 15 × 5 - 8 = 2

→ 9 + 1/5 × 5 - 8 = 2

→ 9 + 1 - 8 = 2

→ 10 - 8 = 2

→ 2 = 2

→ LHS = RHS => Satisfies the equation.

3) ×, ÷

→ 9 + 3 - 15 ÷ 5 × 8 = 2

→ 9 + 3 - 3 × 8 = 2

→ 9 + 3 - 24 = 2

→ 12 - 24 = 2

→ -12 ≠ 2

→ LHS ≠ RHS

4) ×, +

→ 9 × 3 - 15 + 5 ÷ 8 = 2

→ 9 × 3 - 15 + 5/8 = 2

→ 27 - 15 + 5/8 ≠ 2

→ LHS ≠ RHS

Hence, the correct answer is "Option 2".

Q67. Answer: (d) Cinchona

The correct answer is Cinchona

Key Points

• Quinine is a medication used to treat malaria and babesiosis.

• It is extracted from the bark of the Cinchona tree, which is native to South America.

• The use of quinine for treating malaria dates back several centuries and it remains an important anti-malarial drug.

• The Cinchona tree belongs to the family Rubiaceae and is primarily found in regions such as the Andes, Indonesia, and India.

Additional Information

• The active ingredient in quinine is derived from the bark of the Cinchona tree, which contains several alkaloids, including quinine, quinidine, and cinchonine.

• Quinine was the first effective treatment for malaria, and its discovery and use significantly impacted the treatment of the disease.

• Besides its anti-malarial properties, quinine is also used in tonic water, giving it a distinctive bitter taste.

• The global supply of quinine is now largely dependent on cultivated Cinchona trees, as natural sources are limited.

Q68. Answer: (d) 15^(th) August 1974

The correct answer is 15th August 1974

Key Points

• On 15th August 1974, an Indian Chief Minister hoisted the national flag on Independence Day for the first time.

• This event marked a significant moment in the history of India's Independence Day celebrations.

• Before this, the national flag on Independence Day was traditionally hoisted by the President of India at the national level and by Governors in their respective states.

• This change allowed Chief Ministers to play a more prominent role in the celebrations within their states.

Additional Information

• Independence Day in India is celebrated annually on 15th August, commemorating the nation's independence from British rule in 1947.

• The day is observed with flag-hoisting ceremonies, parades, and cultural events across the country.

• The main event takes place at the Red Fort in Delhi where the Prime Minister addresses the nation.

• This tradition of flag hoisting by Chief Ministers has continued, reflecting the federal structure of India's democracy.

Q69. Answer: (a) Tibet

The correct answer is Tibet

Key Points

• Mount Kailash is situated in the Tibet Autonomous Region of China.

• It is considered a sacred place in four religions: Hinduism, Buddhism, Jainism, and Bon.

• Mount Kailash is the source of some of the longest rivers in Asia, including the Indus, Sutlej, Brahmaputra, and Karnali (a tributary of the Ganges).

• It is a peak in the Kailash Range which forms part of the Transhimalaya in Tibet.

Additional Information

• The region is known for its religious significance and is a major pilgrimage site.

• Mount Kailash has a height of 6,638 meters (21,778 feet).

• The mountain is known for its distinctive shape, with four sheer faces matching the cardinal points of the compass.

• Despite its religious importance, climbing Mount Kailash is strictly prohibited, respecting its sanctity.

• Each year, thousands of pilgrims undertake the arduous journey to perform the Kora, a sacred ritual of walking around the base of the mountain.

Q70. Answer: (c) 4000

Calculation:

120% of 3125 - 90% of ? = 150

=> 120/100 × 3125 - 90/100 × ? = 150

=> 6/5 × 3125 - 9/10 × ? = 150

=> 6 × 625 - 9/10 × ? = 150

=> 3750 - 9/10 × ? = 150

=> 3750 - 150 = 9/10 × ?

=> 3600 = 9/10 × ?

=> ? = 3600 × 10/9 = 4000

Hence, the correct answer is 4000.

Q71. Answer: (b) an electronic platform for agriculture market

The correct answer is an electronic platform for agriculture market

Key Points

• e-NAM stands for National Agriculture Market.

• It is an electronic platform launched by the Government of India in April 2016.

• e-NAM aims to create a unified national market for agricultural commodities by integrating existing Agricultural Produce Market Committee (APMC) markets across the country.

• This platform facilitates farmers, traders, and buyers with online trading in commodities, providing better price discovery and market reach.

• It helps in reducing the need for physical presence to sell agricultural produce, thereby reducing transaction costs and improving farmer income.

Additional Information

• The platform was launched as part of the government's initiatives to enhance agricultural productivity and farmer welfare.

• e-NAM is implemented by the Small Farmers' Agribusiness Consortium (SFAC) under the aegis of the Ministry of Agriculture and Farmers' Welfare, Government of India.

• As of now, e-NAM has integrated numerous APMC markets across various states, promoting transparency and competition.

• The platform also provides additional services such as soil testing, quality assaying, and market information.

Q72. Answer: (b) Mangifera Indica

The correct answer is Mangifera Indica

Key Points

• Mangifera Indica is the scientific name of the mango fruit.

• The mango is a tropical fruit belonging to the genus Mangifera, which consists of numerous species of tropical fruiting trees in the flowering plant family Anacardiaceae.

• Mangoes are native to South Asia, from where they have been distributed worldwide to become one of the most cultivated fruits in the tropics.

• The mango is the national fruit of India, Pakistan, and the Philippines, and the national tree of Bangladesh.

Additional Information

• Mangoes have been cultivated in South Asia for thousands of years.

• The fruit varies in size, shape, and color, with a typical mango being oval-shaped and having a smooth, leathery skin that ranges from green to yellow to red.

• Mangoes are rich in vitamins A and C, and are used in a variety of culinary applications, from fresh consumption to being an ingredient in chutneys, pickles, and desserts.

• The Mangifera Indica tree can grow up to 100 feet tall and has a long lifespan, often bearing fruit for several decades.

• Due to its popularity and economic importance, the mango is sometimes referred to as the "king of fruits."

Q73. Answer: (c) 26^(th) January 1930

The correct answer is 26th January 1930

Key Points

• 26th January 1930 was the day when the Indian National Congress declared Purna Swaraj, or complete freedom from the British Raj.

• This declaration was made during the Lahore Session of the Indian National Congress, which was held in December 1929 under the presidency of Jawaharlal Nehru.

• The Purna Swaraj resolution was a significant milestone in the Indian independence movement, symbolizing the Congress's commitment to full independence rather than dominion status.

• Following this declaration, 26th January was celebrated as Independence Day by the Congress party until India achieved actual independence on 15th August 1947.

• The significance of the date is also marked by the fact that the Constitution of India came into effect on 26th January 1950, making India a sovereign republic.

Additional Information

• The Lahore Session of the Indian National Congress in 1929 was a turning point in the Indian freedom struggle, leading to the adoption of the resolution of Purna Swaraj.

• On the midnight of 31st December 1929, the tricolor flag was unfurled on the banks of the Ravi River in Lahore.

• The Congress appealed to the people of India to observe 26th January as Independence Day by hoisting the national flag and participating in civil disobedience movements.

• The demand for complete independence (Purna Swaraj) was a departure from the earlier stance of seeking dominion status within the British Empire.

• This resolution galvanized the Indian masses and intensified the struggle for independence, leading to various movements and protests against British rule.

Q74. Answer: (d) 9 days

Given:

A and B together can finish a piece of work in 10 days.

B and C together can finish it in 15 days.

A and C together can finish it in 18 days.

Formula Used:

Work done per day by A, B, and C together = 1 / (Number of days taken by A, B, and C together to finish the work)

Calculation:

Let the total work be 1 unit.

Work done per day by A and B together = 1 / 10

Work done per day by B and C together = 1 / 15

Work done per day by A and C together = 1 / 18

Let work done per day by A, B, and C be A, B, and C respectively.

Then,

A + B = 1/10

B + C = 1/15

A + C = 1/18

Adding all three equations:

A + B + B + C + A + C = 1/10 + 1/15 + 1/18

=> 2A + 2B + 2C = 1/10 + 1/15 + 1/18

=> 2(A + B + C) = 1/10 + 1/15 + 1/18

=> A + B + C = (1/2) × (1/10 + 1/15 + 1/18)

=> A + B + C = (1/2) × (9/90 + 6/90 + 5/90)

=> A + B + C = (1/2) × 20/90

=> A + B + C = 10/90

=> A + B + C = 1/9

Therefore, A, B, and C together will finish the work in 9 days.

The correct answer is option 4.

Q75. Answer: (a) Gold

According to the given information,

1) Z has a pentagonal shape.

2) X is made up of bronze

Objects	Shape	Colour	Material
X			Bronze
Y			
Z	Pentagon		

3) X is red but not square.

Objects	Shape	Colour	Material
X	Triangular	Red	Bronze
Y	Square		
Z	Pentagon		

4) Y is made up of silver but it is not green.

Objects	Shape	Colour	Material

X	Triangular	Red	Bronze
Y	Square	Blue	Silver
Z	Pentagon	Green	Gold

Here, we can see that Z is made up of Gold.

Hence, the correct answer is "Option 1".

Q76. Answer: (c) Eugenics

The correct answer is Eugenics

Key Points

• Eugenics is the branch of science that aims at improving the genetic quality of the human population.

• The term eugenics was coined by Francis Galton in the late 19th century.

• It involves selective breeding, genetic screening, and other biotechnological interventions to promote desired genetic traits.

• While eugenics has historical significance, it is a controversial field due to its association with unethical practices in the past, including forced sterilizations and discriminatory policies.

• Modern discussions on eugenics often focus on ethical considerations and the potential for genetic technologies to be used responsibly.

Additional Information

• Biotechnology is a broader field that includes the use of living systems and organisms to develop products.

• Genetics is the study of genes, genetic variation, and heredity in organisms.

• Epigenetics is the study of heritable changes in gene expression that do not involve changes to the underlying DNA sequence.

Q77. Answer: (a) Issac Newton

The correct answer is Issac Newton

Key Points

• Issac Newton was the first person to obtain a spectrum by passing light through a prism.

• He conducted his famous prism experiment in the 1660s.

• Newton's work on the spectrum demonstrated that white light is composed of different colors, which can be separated and then recombined.

• His experiments laid the foundation for the field of optics and our understanding of light and color.

Additional Information

• Issac Newton was a renowned physicist and mathematician, best known for his laws of motion and universal gravitation.

• He published his work on optics in the book "Opticks" in 1704.

• Newton's contributions to science also include significant advancements in mathematics, particularly the development of calculus.

• He was a key figure in the Scientific Revolution, influencing many subsequent generations of scientists.

Q78. Answer: (d) Only B

The least possible venn diagram is shown below,

A. All robins are balloons → False (All balloons are robins implies that it is possible that all robins are balloons but not definite).

B. No balloon is a glass → True (All balloons are robins, and no robin is a glass implies that no balloon is a glass).

Hence, the correct answer is "Option 4".

Q79. Answer: (c) 817

Shortcut Trick

To check if a number N is prime, test its divisibility by prime numbers up to √N.

For 817, √817 ≈ 28.5. Test primes: 2, 3, 5, 7, 11, 13, 17, 19...

Check 19: 817 ÷ 19 = 43.

Since 817 is divisible by 19 and 43, it is not a prime number.

Therefore The correct answer is 817.

Alternate Method

Given numbers: 811, 313, 817, 317

Definition: A prime number has exactly two factors: 1 and itself. A composite number has more than two factors.

Evaluating each option:

=> 811: Not divisible by primes up to 28 (2, 3, 5, 7, 11, 13, 17, 19, 23). It is prime.

=> 313: Not divisible by primes up to 17 (2, 3, 5, 7, 11, 13, 17). It is prime.

=> 317: Not divisible by primes up to 17 (2, 3, 5, 7, 11, 13, 17). It is prime.

=> 817: 817 ÷ 19 = 43. Since it has factors 1, 19, 43, and 817, it is not prime.

Therefore The correct answer is 817.

Additional Information

Primality Test

To determine if a number N is prime, check for factors among prime numbers up to √N. If no such factor exists, N is prime.

Composite Numbers

A positive integer greater than 1 that has at least one divisor other than 1 and itself is called a composite number.

Key Primes

Numbers like 817 (19 × 43) and 221 (13 × 17) are common exam trap numbers that appear prime but are actually composite.

Q80. Answer: (b) Spyware

The correct answer is Spyware

Key Points

• Spyware is defined as a program that runs in the background on your computer, sending information about your browsing habits to the company that installed it on your computer.

• It is often installed without the user's knowledge and can gather various types of data, including personal information, internet browsing habits, and other activities.

• Spyware can lead to significant privacy issues and can also slow down the performance of the computer.

• It is considered malicious software and is often bundled with other software or downloaded from malicious websites.

• Spyware removal tools and antivirus software can help detect and remove spyware from the computer.

Additional Information

• Malware is a general term that encompasses various types of malicious software, including viruses, worms, trojans, ransomware, and spyware.

• Adware is software that automatically displays or downloads advertising material when a user is online, often bundled with free software.

• Grayware refers to software that is not outright malicious but may be unwanted and may cause undesirable effects, such as adware and spyware.

• It is essential to keep your system and software up-to-date and use reliable security tools to protect against spyware and other types of malware.

Q81. Answer: (b) 25%

Given:

Sum of money triples itself in 8 years.

Formula Used:

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

Amount (A) = Principal (P) + Simple Interest (SI)

Calculation:

Let the Principal (P) = 100 (for simplicity)

If the sum triples, the Amount (A) = 3 × Principal (P) = 3 × 100 = 300

Simple Interest (SI) = Amount (A) - Principal (P)

SI = 300 - 100 = 200

Using the formula for Simple Interest:

SI = P × R × T / 100

200 = 100 × R × 8 / 100

=> 200 = 8R

=> R = 200 / 8

=> R = 25

The rate of simple interest is 0.25 or 25%.

Q82. Answer: (a) National Waterway-4

The correct answer is National Waterway-4

Key Points

• National Waterway-4 runs along the Coromandal Coast and passes through parts of the Krishna and Godavari rivers in South India.

• It is one of the important waterways facilitating inland navigation and transport in the region.

• This waterway enhances connectivity and supports economic activities in the coastal and riverine areas of Andhra Pradesh and Tamil Nadu.

• The waterway covers a total length of approximately 1,078 kilometers.

Additional Information

• National Waterways in India are a series of navigable rivers and canals designated for the purpose of inland water transport.

• The Inland Waterways Authority of India (IWAI) is responsible for the development and regulation of these waterways.

• National Waterway-4 was declared as a National Waterway in 2008 under the National Waterways Act.

• Development of these waterways aims to reduce the burden on road and rail transport and promote eco-friendly and cost-effective transportation.

• Other major National Waterways include NW-1 (Ganga-Bhagirathi-Hooghly river system), NW-2 (Brahmaputra river), and NW-3 (West Coast Canal).

• Efforts are ongoing to improve the infrastructure and navigability of these waterways to boost trade and commerce.

Q83. Answer: (a) User name

The correct answer is User name

Key Points

• India is the user name in the e-mail address India@solu.edu.

• An email address typically consists of two main parts: the user name and the domain name, separated by the "@" symbol.

• The part before the "@" symbol is known as the user name, which identifies the email account holder.

• The part after the "@" symbol is the domain name, which indicates the server where the email account is hosted.

• In this case, solu.edu is the domain name, and India is the user name.

• User names in email addresses can contain letters, numbers, and some special characters, but they must be unique within the domain.

Additional Information

• Email addresses are a fundamental part of online communication, allowing users to send and receive messages and files over the internet.

• Each email address is unique and can be used to identify and contact the email account holder.

• Ensuring the correct format of an email address is important for proper delivery of emails.

• Many email service providers offer tools to help users create unique and secure user names for their email addresses.

• It is important to choose a user name that is easy to remember but also secure to protect against unauthorized access.

Q84. Answer: (a) $\theta = 2n\pi \pm \alpha$,n in Z

Given:

$\cos \theta = \cos \alpha$

Formula Used:

General solution for $\cos \theta = \cos \alpha$ is:

$\theta = 2n\pi \pm \alpha$, n in Z

Calculation:

Given $\cos \theta = \cos \alpha$

Using the formula for the general solution:

$\Rightarrow \theta = 2n\pi \pm \alpha$, n in Z

The general solution for θ is $\theta = 2n\pi \pm \alpha$, n in Z.

Q85. Answer: (a) 12

Given:

Numbers: 36 and 48

Formula Used:

Highest Common Factor (HCF) is the greatest number that divides both the numbers without leaving a remainder.

Calculation:

Prime factorization of 36:

$36 = 2^2 \times 3^2$

Prime factorization of 48:

48 = 2^4 × 3

Common prime factors with the lowest powers:

2^2 and 3

$HCF = 2^2 \times 3$

=> HCF = 4 × 3

=> HCF = 12

The highest common factor of 36 and 48 is 12.

Q86. Answer: (a) • 10

Given Equation: 24 + 6 ÷ 2 - 9 × 4

BODMAS Rule:

Decoding the given information:

Symbol	•	•	×	÷
Meaning	×	÷	•	•

Now replacing the sign from left to right using BODMAS Rule, we get:

=> 24 ÷ 6 - 2 × 9 + 4

=> 4 - 2 × 9 + 4

=> 4 - 18 + 4

=> 8 - 18 = -10.

Hence, the correct option is "Option 1".

Q87. Answer: (b) Aman

According to the given information,

1) Vicky is taller than Hrithik.

Vicky > Hrithik

2) Abhay is taller than Hrithik. Anil is taller than Abhay.

Anil > Abhay > Hrithik

2) Hrithik is taller than Aman.

Hrithik > Aman

Here, we can see that Aman is the shortest.

Hence, the correct answer is "Option 2".

Q88. Answer: (a) 90

The logic followed here is,

Hence, the correct answer is "Option 1".

Q89. Answer: (c) Mother's brother's child

Preparing the family tree using the following symbols,

The family tree can be drawn as per the given information,

Here, we can see that T is the mother's brother's child of S.

Hence, the correct answer is "Option 3".

Q90. Answer: (d) F

According to the given information,

1) A and B are from the Red House and the others are from the Green House.

2) A, C and D are boys.

Red House	**Green House**		
Boy	Girl	Boy	Girl

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A	B	C, D	E, F

3) D and F are tall, unlike the others.

Red House	**Green House**		
Boy	Girl	Boy	Girl
A (Short)	B (Short)	C (Short), D (Tall)	E (Short), F (Tall)

Here, we can see that F is the tall girl from the Green House.

Hence, the correct answer is "Option 4".

Q91. Answer: (a) Only conclusion 2 follows.

Given:

Statements:

Some singers are not dancers. Some dancers are artists. No artist is a magician.

The least possible Venn Diagram is as follows:

Conclusions:

1. Some singers are artists. → Does not follow. (This is a possibility but not a definite conclusion as no direct relation is provided.)

2. Some dancers are not magicians. → Follows. (Some dancers are artists and no artists are magicians. This implies that those dancers which are artists are definitely not magicians. So, some dancers are not magicians.)

3. Some singers are magicians. → Does not follow. (This is a possibility but not a definite conclusion as no direct relation is provided.)

Therefore, only conclusion 2 follows.

Hence, the correct answer is "Option 1".

Q92. Answer: (d) 77

The logic followed here is:

Logic: (1st number × Next prime number of 1st number) = 2nd number.

Now,

For, 11 : 143

=> 11 × 13 = 143 (Next prime number after 11 is 13)

For, 13 : 221

=> 13 × 17 = 221 (Next prime number after 13 is 17)

Similarly, for 7 : ?

=> 7 × 11 = 77 (Next prime number after 7 is 11)

Hence, the correct answer is "Option 4".

Q93. Answer: (c) Only A

The least possible venn diagram is shown below,

Conclusions:

A. Some children are bears → True (All brides are bears and all brides are children implies that some of those children who are brides are also bears).

B. Some blues are children → False (All blues are bears, all brides are bears and all brides are children implies that it is possible that some blues are children but not definite).

C. Some blues are brides → False (All blues are bears and all brides are bears implies that it is possible that some blues are brides but not definite).

D. Some brides are not children → False (All brides are children implies that it is not possible that some brides are not children).

Hence, the correct answer is "Option 3".

Q94. Answer: (a) W

The logic followed here is,

C : X

Similarly,

D : ?

Hence, the correct answer is "Option 1".

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Q95. Answer: (c) Either A or B

The least possible venn diagram is shown below,

Conclusions:

A. No fly is a rhino → False (All rhinos are pigs and some flies are pigs implies that it is possible that no fly is a rhino but not definite).

B. Some flies are rhinos → False (All rhinos are pigs and some flies are pigs implies that it is possible that some flies are rhino but not definite).

→ Here, we can see that both A and B are complementary of each other.

Hence, the correct answer is "Option 3".

Q96. Answer: (a) KPY

The logic followed here is,

Hence, the correct answer is "Option 1".

Q97. Answer: (c) W - Mumbai

According to the given information,

1) R is going to Goa.

2) S and T are going to UP and Panji respectively.

Person	Destination
P	
Q	
R	Goa
S	UP
T	Panji
U	
V	
W	

3) V is not going to Delhi, Mumbai, or Punjab.

4) P and Q are not going to Punjab or Mumbai. U is not going to Delhi or Mumbai.

Person	Destination
P	Delhi / Chennai / Hyderabad
Q	Delhi / Chennai / Hyderabad
R	Goa
S	UP
T	Panji
U	Chennai / Hyderabad / Punjab
V	Chennai / Hyderabad
W	Mumbai

Let's check each option,

1) W - Delhi → Incorrect

2) Q - Delhi → Not definitely correct

3) W - Mumbai → Definitely correct

4) P - Delhi → Not definitely correct

Hence, the correct answer is "Option 3".

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Q98. Answer: (b) N13XK

The logic followed here is,

Hence, the correct answer is "Option 2".

Q99. Answer: (d) A

According to the given information,

1) G is at the immediate left of A and third to the right of D.

2) C is immediate neighbour of G. C is not the immediate neighbour of B.

3) There are two persons between A and B.

4) E and F are adjacent to each other.

5) F is not the immediate neighbour of A and D.

Thus, the final arrangement is,

Here, we can see that A is second to the left of F.

Hence, the correct answer is "Option 4".

Q100. Answer: (a) Only assumption I is implicit.

Given Statement: Talk to everyone politely even if your social status is high.

Now,

Assumptions:

1. Generally, people do not speak politely after gaining high social status - Implicit (The statement advises speaking politely regardless of high social status, implying that people with high social status often do not speak politely.)

2. One's social status might decline someday - Not Implicit (The statement does not address the possibility of social status declining, only the behavior regardless of social status.)

Here, Only assumption I is implicit.

Hence, the correct answer is "Option 1".

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