RRB NTPC CBT-I Official Paper (Held On: 13 Mar 2021 Shift 1) (Previous Year Paper)

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

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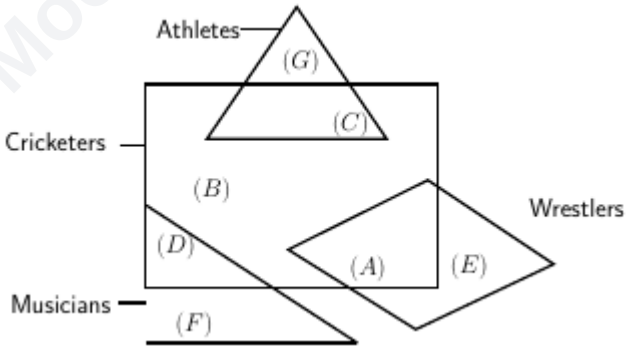
Scan the QR code or click the link to open it.

Q1. If the number 2564$4 is exactly divisible by 4, then which of the following digit cannot be in the place of $?

(a) 2
(b) 6
(c) 5
(d) 8

Q2. In the given figure, the upper triangle represents 'Athletes', the right-angle triangle represents 'Musicians', the diamond represents 'Wrestlers' and the rectangle represents 'Cricketers' as shown below.

Study the given figure and answer the question that follows.



Which of the following represents persons who are NOT wrestlers ONLY?

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

Q3. If tanθ = 12/5, then (1 + sin θ)/(1 - sin θ) is:

(a) 24
(b) 25
(c) 22
(d) 20

Q4. The selling price of 25 items is equal to the cost price of 20 items. What is the percentage of loss?

(a) 25%
(b) 23%
(c) 20%
(d) 21%

Q5. 'Startup India' is a major initiative by the Government of India. In which year was it launched?

(a) 2016
(b) 2014
(c) 2015
(d) 2017

Q6. A, B and C can complete a piece of work in 6, 4 and 10 days, respectively. If they are working together, then the number of days they will take to complete the same work is:

(a) 129/31
(b) 221/20
(c) 131/30
(d) 220/21

Q7. Which causative agent is responsible for spreading swine flu?

(a) Parasite
(b) Fungi
(c) Bacteria
(d) Virus

Q8. Who among the following has been conferred the Padma Vibhushan in 2021?

(a) Keshubhai Patel
(b) Sudarshan Sahoo
(c) Sumitra Mahajan
(d) Jagdish Chaudhary

Q9. The headquarter of the Archaeological Survey of India is located in:

(a) New Delhi
(b) Mumbai
(c) Jodhpur
(d) Jaipur

Q10. Read the given statement and conclusions carefully. Assuming that the information given in the statement is true, even if it appears to be variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statement.

Statement:

Aged persons should avoid vigorous exercises.

Conclusions:

(A) Exercises are not essential for youngsters.

(B) Vigorous exercises can cause damage to tendons.

(a) Only conclusion A follows.
(b) Both conclusions A and B follow.
(c) Neither conclusions A nor B follows.
(d) Only conclusion B follows.

Q11. The value of $\sqrt{(217 + \sqrt{(50 + \sqrt{196})})}$ is:

(a) 14
(b) 25
(c) 64
(d) 15

Q12. Match the following companies with their headquarters.

A.	**Bharat Heavy Electricals Limited**	**1.**	**Mumbai**
B.	Coal India Limited	2.	Bengaluru
C	Bharat Petroleum Corporation Limited	3.	Kolkata
D	Bharat Electronics Limited	4.	New Delhi

(a) A - (4), B - (3), C - (1), D - (2)

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(b) A - (4), B - (2), C - (1), D - (3)
(c) A - (4), B - (3), C - (2), D - (1)
(d) A - (3), B - (2), C - (1), D - (4)

Q13. The National Tree of India is:

(a) Banyan
(b) Peepal
(c) Sal
(d) Mango

Q14. If 35% of A's income is equal to 40% of B's income. Then the ratio of the incomes of A and B is:

(a) 4 : 5
(b) 5 : 4
(c) 8 : 7
(d) 7 : 8

Q15. If we select 3 persons randomly from a group, consisting of 4 men, 3 women and 2 boys, then the probability that 2 men are selected is:

(a) 5/14
(b) 5/28
(c) 3/14
(d) 7/12

Q16. Nisha daily goes to play badminton in a playground. The playground is in the south direction from her house. From the playground, she goes to her friend Suman's house that is in the west direction from the playground. From Suman's house, both Nisha and Suman go to a market. The market is in the west direction from Suman's house.

What will be the direction of Nisha's home from the playground?

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

Q17. In which year did Jawaharlal Nehru lay the foundation stone of the National Museum in New Delhi?

(a) 1950
(b) 1955
(c) 1965
(d) 1960

Q18. Who among the following has served as the Prime Minister of India for the longest time?

(a) Atal Bihari Vajpayee
(b) Jawaharlal Nehru
(c) Manmohan Singh
(d) Narendra Modi

Q19. Ubuntu, Mint and Fedora are versions of:

(a) Windows 10
(b) MS DOS
(c) Apple MAC OS X
(d) Linux

Q20. In a town, the population increased from 1,85,500 to 2,22,600 in a decade. The average percentage increase of population per year is:

(a) 9%
(b) 2%
(c) 5%

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(d) 3%

Q21. Six boys P, Q, R, S, T and W are compared on the basis of their age (not necessarily in the same order). Age of no two boys is same. Only four boys are younger that Q. S is elder to P and R. T is elder to W and S.

Who is the eldest amongst them?

(a) Q
(b) P
(c) W
(d) T

Q22. Sangeet Natak Akademi, the national academy for music, dance and drama, was the first national academy of the arts set up by the Republic of India. This academy is located in:

(a) Bengaluru
(b) Mumbai
(c) New Delhi
(d) Bhopal

Q23. When was the Reserve Bank of India established?

(a) 1^(st)April 1945
(b) 1^(st) April 1935
(c) 21^(st) April 1930
(d) 1^(st)April 1925

Q24. Arrange the following states of India in the decreasing order of sugarcane production in 2019.

A. Karnataka

B. Uttar Pradesh

C. Maharashtra

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

Q25. In an election involving two candidates, 86 votes were declared invalid. The winning candidate secured 58% and won by 256 votes. The total number of votes polled is:

(a) 1866
(b) 1668
(c) 1868
(d) 1686

Q26. When was India's first semi-high speed train Vande Bharat Express flagged off by Prime Minister Narendra Modi?

(a) 15^(th) February 2019
(b) 15^(th) January 2019
(c) 15^(th)March 2019
(d) 15^(th)December 2018

Q27. If √225 = 15 then the value of √2.25 + √0.0225 + √0.000225 is:

(a) 1.689
(b) 1.645
(c) 1.665
(d) 1.675

Q28. Bengali writer, Rabindranath Tagore became the first Indian to win the Nobel Prize for Literature in the year _____ for his collection of poems called 'Gitanjali'.

(a) 1910
(b) 1917

(c) 1913
(d) 1953

Q29. The greatest number, which will divide 39 and 84 to leave remainder 3 in each case, is:
(a) 4
(b) 9
(c) 2
(d) 6

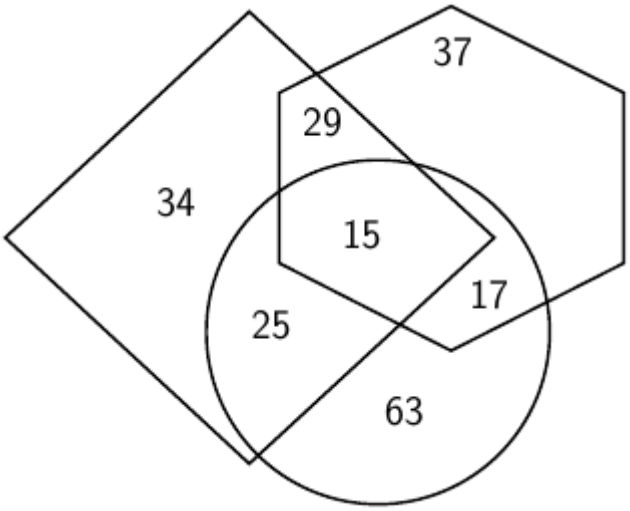
Q30. An urn contains 10 black and 5 white balls. Two balls are drawn from the urn one after the other without replacement. What is the probability that both drawn balls are black?
(a) 2/7
(b) 5/7
(c) 3/7
(d) 4/7

Q31. Select the option that is related to the third term in the same way as the second number is related to the first term.
Chair : 4921019 :: Mobile : ?
(a) 131529125
(b) 512921513
(c) 491529125
(d) 1416310136

Q32. If a/b = 0.75, then the value of (2a + b)/(2a - b) + 4/9 is:
(a) 41/9
(b) 43/9
(c) 47/9
(d) 49/9

Q33. In a certain language, RAM is written as SBN. How will SHYAM be written as in that language?
(a) TZIBN
(b) TBZIN
(c) TIZBN
(d) TIBZN

Q34. Study the given diagram and answer the question that follows.
The hexagon represents Females.
The circle represents Writers.
The quadrilateral represents Bengali.



How many female writers are Bengali?

(a) 15
(b) 40
(c) 32
(d) 57

Q35. The elements that have intermediate properties between those of metals and non-metals are called metalloids. Which among the following is known as a metalloid?

(a) Iodine
(b) Copper
(c) Carbon
(d) Germanium

Q36. Select the number that will come next in the following series.

8, 12, 20, 32, 48, ?

(a) 60
(b) 58
(c) 64
(d) 68

Q37. In which of the following decades was India's population growth recorded as a negative growth rate?

(a) 1911-1921
(b) 1931-1941
(c) 1921-1931
(d) 1901-1911

Q38. Arrange the names of the following Indian presidents in the descending order of their tenure.

A. Fakhruddin Ali Ahmed
B. Neelam Sanjiva Reddy
C. Dr. Zakir Hussain
D. Giani Zail Singh

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

Q39. Which of the following disease does NOT spread through the air?

(a) Pneumonia
(b) Tuberculosis
(c) Common cold
(d) Cholera

Q40. If x : y = 3 : 5, then the value of (5x - 3y)/(10x + 6y) is:

(a) 1
(b) 0
(c) -1
(d) 2

Q41. Select the letters that will come next in the following series.

AF, BG, CH, DI, ?

(a) EJ
(b) FE
(c) EF
(d) FK

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Q42. Which of the following former Indian test cricketers was NOT known for wicket keeping?

(a) P. G. Joshi
(b) F. M. Engineer
(c) N. S. Tamhane
(d) B. S. Chandrasekhar

Q43. In a certain language, SACHIN is written as 19138914. How will GEETA be written as in that language?

(a) 201755
(b) 755201
(c) 755211
(d) 102755

Q44. The fifth India International Science Festival (IISF) was held in November 2019 in:

(a) Kolkata
(b) Chennai
(c) Bengaluru
(d) New Delhi

Q45. Which of the following is INCORRECT?

(a) 1 GB = 2^(30) byte
(b) 1 GB = 2^(20) byte
(c) 1 MB = 2^(10) KB
(d) 1 MB = 2^{13} bit

Q46. In the state Emblem of India there is a quote saying 'Satyameva Jayate,' which is inscribed in Devanagari script. This quote has been taken from:

(a) Adhyatma Upanishad
(b) Katha Upanishad
(c) Mantrika Upanishad
(d) Mundaka Upanishad

Q47. In 2008, Indian Space Research Organization (ISRO) began its collaboration with _____ to develop the GPS-Aided Geo Augmented Navigation (GAGAN) system to help aircrafts accurately land over the Indian airspace.

(a) Hindustan Aeronautics Limited
(b) Airport Authority of India
(c) Cochin Shipyard Limited
(d) Pawan Hans Helicopters Limited

Q48. Where did President Ram Nath Kovind inaugurate the Festival of Innovation & Entrepreneurship (FINE) on 15 March 2019?

(a) Gandhinagar, Gujarat
(b) Surat, Gujarat
(c) Vadodara, Gujarat
(d) Lucknow, Uttar Pradesh

Q49. If a/b = 3/2 and b/c = 3/5, then the value of (a + b)/(b + c) is:

(a) 15/16
(b) 9/11
(c) 5/16
(d) 6/11

Q50. The unit of Force is:

(a) Kgms^(-2)
(b) gms^(-2)
(c) Kgms^(-1)

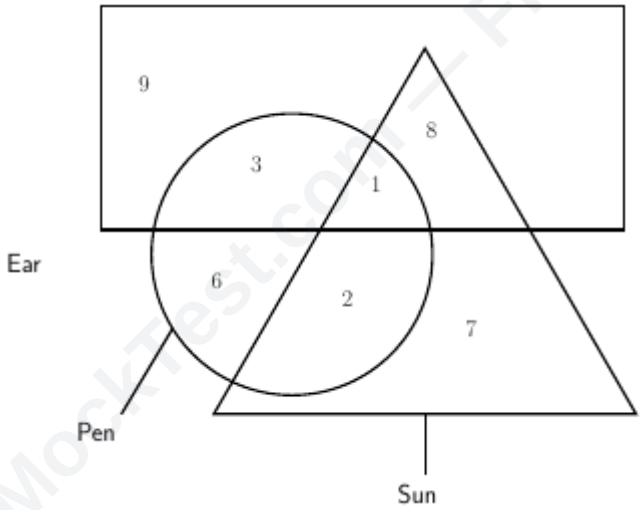
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(d) gms^(-1)

Q51. The work done by a force acting on an object is equal to the amount of force multiplied by the distance travelled in the direction of the force. Which of the following is NOT a unit of work?

(a) Joule
(b) Kgm² /sec²
(c) Kgm /sec²
(d) Newton meter

Q52. Study the given diagram and answer the question that follows.



How many Sun are Ears?

(a) 6
(b) 11
(c) 8
(d) 9

Q53. The headquarters of the World Tourism Organization (UNWTO) is located at:

(a) Madrid, Spain
(b) Johannesburg, South Africa
(c) Frankfurt, Germany
(d) Mandaluyong, Philippines

Q54. The value of 3 + [3 × {3 - (3 + 3) ÷ 6}] is:

(a) 3
(b) -3
(c) 6
(d) 9

Q55. The value of 56/5 + 51/10 ÷ 32/5 is:

(a) 127/10
(b) 84/7
(c) 91/4
(d) 107/12

Q56. The LCM of 2/3,4/9,7/12,3/5 is:

(a) 84
(b) 86
(c) 94
(d) 98

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Q57. If 2160/(√x) = 240 then the value of x is:

(a) 49
(b) 58
(c) 81
(d) 100

Q58. Arrange the following events in their chronological order.

A. Jallianwala Bagh massacre
B. Non-Cooperation Movement and Khilafat Movement
C. Gandhi-Irwin Pact
D. Quit India Movement
E. Champaran Movement

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

Q59. Pick the odd one out.

(a) ACE
(b) PRT
(c) KMO
(d) GHI

Q60. _____ won the Bal Shakti Puraskar 2019 in the field of social service for his/her contribution to the environment. She/He is the youngest among all the award recipients.

(a) Angel Vijay Deokule
(b) Eiha Dixit
(c) Adrika Goyal
(d) Truptraj Atul Pandya

Q61. The HCF of two numbers is 37 and their LCM is 740. If one of the numbers is 148, then the other is:

(a) 190
(b) 180
(c) 185
(d) 195

Q62. Which Article of the Constitution of India provides that there shall be a Council of Ministers with the Prime Minister as its head to aid and advice the president, who shall exercise his/her functions in accordance to the advice?

(a) Article 79(1)
(b) Article 74(1)
(c) Article 72(1)
(d) Article 73(1)

Q63. India's First Marine park is situated in:

(a) Gulf of Mannar
(b) Jamnagar
(c) Gulf of Kutch
(d) Chennai

Q64. Select the option that is related to the third word in the same way as the second word is related to the first word:

Bank : Loan :: Court : ?

(a) Judgement
(b) Fees
(c) Lawyer

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(d) Law

Q65. Which country is not the part of proposed TAPI gas pipeline?

(a) Turkmenistan
(b) India
(c) Afghanistan
(d) Iran

Q66. There are three isotopes of hydrogen atom, namely Protium, Deuterium and Tritium. The respective atomic number and mass number of the isotope Tritium is:

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

Q67. The length and breadth of a rectangular field are in the ratio of 6 : 5. If the perimeter of the field is 110 m, then what will be the breadth (in m)?

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

Q68. Kamal can complete a work in 14 days. Vimal is 40% more efficient than Kamal. The number of days Vimal will take to complete the same piece of work is:

(a) 10 days
(b) 14 days
(c) 12 days
(d) 15 days

Q69. Which of the following Civic body has been declared best performing Municipal Corporation of India under PM Awas Yojana in December 2020?

(a) Vishakhapatnam
(b) Hyderabad
(c) Chennai
(d) Indore

Q70. Where is the headquarters of the Zoological Survey of India?

(a) New Delhi
(b) Mysuru
(c) Kolkata
(d) Mumbai

Q71. Which of the following are the fastest seismic waves?

(a) Surface waves
(b) Primary waves
(c) Tidal waves
(d) Secondary waves

Q72. A cistern 8 m long and 4 m wide contains water up to a depth of 1 m 22 cm. Then the total area of the wet surface is:

(a) 61.28 m^2
(b) 71.28 m^2
(c) 81.28 m^2
(d) 51.28 m^2

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Q73. Asoka, arguably the most famous ruler of early India, conquered Kalinga. He was the grandson of _____.

(a) Chandragupta Maurya
(b) Samudragupta
(c) Prabhavati Gupta
(d) Chandragupta II

Q74. The ratio in which point (4, 5) divides the line joining two points (2, 3) and (7, 8) is:

(a) 4 : 5
(b) 1 : 2
(c) 3 : 4
(d) 2 : 3

Q75. A shared network within an organisation to provide connectivity to its staff is:

(a) intranet
(b) extranet
(c) telnet
(d) internet

Q76. In March 2019, the Indian Open international snooker tournament, under the aegis of the World Professional Billiards and Snooker Association, was held at Kochi in Kerala. Who won the final of this tournament?

(a) Anthony Hamilton
(b) Matthew Selt
(c) John Higgins
(d) Lyu Haotian

Q77. Certain amount becomes Rs. 230 in 3 years at 5% simple interest per annum. Then the principal amount (in Rs.) is:

(a) 150
(b) 200
(c) 180
(d) 320

Q78. Pick the odd one out.

(a) Milk Cake
(b) Milkshake
(c) Milk Dairy
(d) Chocolate Milk

Q79. Anand purchased a car for Rs. 3,75,000 and sold it at a loss of 15%. At what cost did he sell the car?

(a) Rs. 3,25,000
(b) Rs. 3,36,250
(c) Rs. 3,58,000
(d) Rs. 3,18,750

Q80. Excluding the stoppages, the speed of a bus is 80 km/h and including the stoppages, the speed of the bus is 52 km/h. How many minutes does the bus stop per hour?

(a) 25 min
(b) 21 min
(c) 45 min
(d) 30 min

Q81. What will be the interest on the amount of Rs. 25,000 compounded annually at the rate of 4%, 5% and 6% per annum for the first, second and third year respectively?

(a) Rs. 3839
(b) Rs. 3939
(c) Rs. 3938

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(d) Rs. 3838

Q82. Under the Clean India Mission, the Air Quality Index is a major initiative. When was it launched by the Ministry of Environment, Forest and Climate Change?

(a) September 2015
(b) October 2014
(c) September 2014
(d) October 2015

Q83. Read the given statements and conclusions carefully and decide which of the conclusions logically follow(s) from the statements.

Statements:

1. Aarohi is fond of river-rafting.
2. River-rafting is an adventurous sport.

Conclusions:

1. Aarohi loves all adventurous sports.
2. Aarohi is an adventurous person.

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

Q84. If $\sin\theta + \cos\theta = p$ and $\sec\theta + \operatorname{cosec}\theta = q$, then the value of $q(p^2 - 1)$ is:

(a) p
(b) 2p
(c) p^2
(d) $p^2 + 1$

Q85. If the centroid of the triangle formed by the points (3, 5) (-7, 4) (10, -6) is at the point (k, 1), then the value of k is:

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

Directions

Study the given data and answer the question that follows.

A survey on 500 students regarding Internet addiction was conducted and findings are reported as under in tabular form:

Level of Addiction	**Students**					
Commerce	Sciences	Social Sciences				
Boys	Girls	Boys	Girls	Boys	Girls	
High	35	22	18	20	22	26
Average	25	34	23	45	12	30
Low	40	27	34	23	34	30
Total	100	83	75	88	68	86

Q86. If High Addiction is given a weightage of 3, Average a weightage of 2 and Low Addiction a weightage of 1, which group would have the highest addiction levels.

(a) Girls of Commerce Group
(b) Boys of Commerce Group
(c) Girls of Social Sciences Group

(d) Boys of Sciences Group

Q87. Girls students of the Sciences group in the Low category of Addiction form what percentage of the total student sample?

(a) 32.6%
(b) 4.6%
(c) 23%
(d) 11.4%

Q88. Boys form approximately what percentage of the High Addition group?

(a) 49%
(b) 15%
(c) 31%
(d) 52%

Q89. The following table gives the number of fresh registrations of scooters and motorcycles in a city in three years. In which year(s) did the number of fresh registrations of both scooters and motorcycles separately AND together register fluctuation of more than 50%?

Year → Vehicle ↓	2004-05	2005-06	2006-07
Scooters	904	1316	2017
Motorcycles	1654	2019	722

(a) Both 2005-06 and 2006-07
(b) Neither 2005-06 nor 2006-07
(c) 2006-07
(d) 2005-06

Q90. Select the incorrect pair:

(a) Classroom-Playground
(b) Teacher-Lecture
(c) Computer-software
(d) Exam-Result

Q91. Select the letter that will come next in the following series.

Z, X, U, Q, L, ?

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

Q92. Select the number that will come next in the following series.

5, 7, 11, 17, 25, ?

(a) 31
(b) 35
(c) 37
(d) 29

Q93. "Milk" is related to "Dairy" in the same way as "Bread" is related to "_____"

(a) Grains
(b) Loaf
(c) Bakery
(d) Carbohydrates

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Q94. From the following information, determine whose book is neither a novel nor in Paperback format.

1) The books of Ken Singleton, George Smith, and Harold masters are poems.

2) The books of John Procter, Robin Hopkins and Ken Singleton are Paperbacks.

3) The books of Robin Hopkins, George Smith and John Procter are novels.

4) The books written by Ken Singleton, Harold masters and John Procter have brown leather covers with black spine.

(a) Ken Singleton
(b) George Smith
(c) Harold Masters
(d) John Procter

Q95. Out of the four resources listed, three are alike in some manner and one is different. Select the odd one.

(a) Coal
(b) Petroleum
(c) Biogas
(d) Natural Gas

Q96. Select the option that is related to the third term in the same way as the second term is related to the first term.

Kidney : Urine : : Lungs : ?

(a) Cough
(b) Carbon Dioxide
(c) Breathe
(d) Oxygen

Q97. Seven persons A, B, C, D, E, F and G are sitting in a row (not necessarily in the same order) facing towards north. C sits third to the left of E. E is the neighbour of A. Only two persons sit between A and B. Only three persons sit between C and F. Only two persons sit between F and G.

Which of the following seating arrangement cannot be possible (from left to right)?

(a) C, G, A, E, F, B, D
(b) D, C, G, A, E, F, B
(c) D, B, C, G, A, E, F
(d) B, D, C, G, A, E, F

Q98. Sachin daily goes to school on his bicycle and the distance between his home and the school is 7 km. After school time, he directly goes to gym from the school. The distance from the school to the gym is 3 km. From gym, he goes to a market. The distance between the gym and the market is 2 km. The distance between the market and his home is 2.5 km.

What is the distance between his home and the gym through shortest route?

(a) 3 km
(b) 10 km
(c) 4.5 km
(d) 2 km

Q99. If ' A + B' means 'A is the daughter of B', 'A - B' means 'A is the father of B', 'A × B' means 'A is the brother of B' and ' A ÷ B' means 'A is the wife of B', then 'P ÷ R - Q × S' will mean:

(a) Q is the sister of S.
(b) P is the mother of S.
(c) S is the sister of Q.
(d) Q is the daughter of P.

Q100. Study the given pattern carefully and select the number that can replace the question mark (?) in it.

15	**10**	**5**	**20**
27	11	8	30
45	10	15	?

(a) 10
(b) 30
(c) 40
(d) 20

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (c) 5

Given:
The number is 2564$4.
The number is exactly divisible by 4.
Formula Used:
A number is divisible by 4 if the last two digits form a number that is divisible by 4.
Calculation:
We need to check the last two digits formed with each option:
If $ = 2, last two digits = 24 => 24 ÷ 4 = 6 (divisible)
If $ = 6, last two digits = 64 => 64 ÷ 4 = 16 (divisible)
If $ = 5, last two digits = 54 => 54 ÷ 4 = 13.5 (not divisible)
If $ = 8, last two digits = 84 => 84 ÷ 4 = 21 (divisible)
The correct answer is option 3.

Q2. Answer: (c) A

According to the given information:
The shaded part represents persons who are NOT wrestlers ONLY.
Thus, A represents persons who are NOT wrestlers ONLY.
Hence, the correct answer is "A".

Q3. Answer: (b) 25

Given:
tanθ = 12/5
Formula Used:
sin θ = opposite/hypotenuse
cos θ = adjacent/hypotenuse
Calculation:
We know tan θ = opposite/adjacent
Here, opposite = 12 and adjacent = 5.
Using Pythagoras theorem:

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

Hypotenuse} = $\sqrt{(144 + 25)}$

Hypotenuse} = $\sqrt{169}$

Hypotenuse} = 13

Now, $\sin \theta = 12/13$

$(1 + \sin \theta)/(1 - \sin \theta) = (1 + 12/13)/(1 - 12/13)$

$\Rightarrow (1 + 12/13)/(1 - 12/13) = ((13 + 12)/13)/((13 - 12)/13)$

$\Rightarrow (25/13)/(1/13) = 25/13 \times 13/1$

$\Rightarrow 25$

The correct answer is option 2.

Q4. Answer: (c) 20%

Given:

Selling price of 25 items = Cost price of 20 items

Formula Used:

Percentage Loss = (Cost Price - Selling Price)/(Cost Price) × 100

Calculation:

Let Cost Price (CP) of 1 item = Rs. 1

So, Cost Price of 20 items = Rs. 20

Given, Selling Price (SP) of 25 items = Cost Price of 20 items

SP of 25 items = Rs. 20

SP of 1 item = Rs. 20 / 25

SP of 1 item = Rs. 0.8

Loss per item = CP - SP

Loss per item = Rs. 1 - Rs. 0.8

Loss per item = Rs. 0.2

Percentage Loss = (0.2)/1 × 100

Percentage Loss = 20%

The correct answer is option 3.

Q5. Answer: (a) 2016

The correct answer is 2016.

Key Points

• Startup India is a flagship initiative of the Government of India, intended to build a strong ecosystem that is conducive for the growth of startup businesses.

• The campaign was first announced by Indian Prime Minister Narendra Modi during his speech on 15 August 2015.

• The Startup India initiative was officially launched on 16 January 2016.

• The objective of the campaign is to create a strong ecosystem for nurturing innovation and startups in the country that will drive sustainable economic growth and generate large scale employment opportunities.

Additional Information

• Startup India Action Plan:

• The action plan for Startup India was unveiled by the Prime Minister on January 16, 2016, and it includes measures for the creation of incubation centers, easier patent filing, tax exemptions, and ease of setting up businesses.

• It aims to simplify the startup process, offers financial support, and provides a favorable environment for startups to flourish.

• Fund of Funds for Startups (FFS):

• To provide funding support to startups, the Government of India has set up a Fund of Funds with a corpus of INR 10,000 crore, managed by the Small Industries Development Bank of India (SIDBI).

• The FFS aims to support various alternative investment funds (AIFs) which in turn invest in startups.

• Startup India Hub:

• The Startup India Hub has been established to resolve queries and provide hand-holding support to startups throughout their lifecycle.

• The Hub acts as a single point of contact for the startup ecosystem, enabling knowledge exchange and access to funding.

• Tax Exemptions:

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• Startups are eligible for an income tax exemption for three consecutive years out of their first ten years since incorporation.
• Exemptions are also provided from capital gains tax and investments above the fair market value.

Q6. Answer: (a) 129/31

Given:
Time taken by A to complete the work = 6 days
Time taken by B to complete the work = 4 days
Time taken by C to complete the work = 10 days
Formula Used:
Combined work rate = (1/A's rate) + (1/B's rate) + (1/C's rate)
Time taken to complete the work together = 1 / Combined work rate
Calculation:
Work rate of A = 1/6
Work rate of B = 1/4
Work rate of C = 1/10
Combined work rate = (1/6) + (1/4) + (1/10)
=> Combined work rate = 1/6 + 1/4 + 1/10
=> Combined work rate = (10 + 15 + 6)/60
=> Combined work rate = 31/60
Time taken to complete the work together = 1 / Combined work rate
=> Time taken = 60/31
=> Time taken = 129/31 days
The correct answer is option 1: 129/31

Q7. Answer: (d) Virus

The correct answer is Virus
Key Points
• The causative agent responsible for spreading swine flu is a virus:
• Swine influenza virus (SIV): A type A influenza virus that causes swine flu, a highly contagious respiratory disease in pigs
• H1N1 virus: A relatively new strain of influenza virus that causes swine flu in humans
• Swine flu spreads from person to person through coughing or sneezing.
• Symptoms are similar to the regular flu, including fever, cough, sore throat, body aches, headache, chills, and fatigue.
• In the past, swine flu has caused severe illness and deaths in people.
Additional Information
• Parasites
• Parasites are organisms that live on or inside a host organism, deriving nutrients at the host's expense.
• They can be unicellular (like protozoa) or multicellular (like worms).
• Types: Common types of parasites include protozoa (e.g., Plasmodium causing malaria), helminths (e.g., tapeworms), and ectoparasites (e.g., lice, ticks).
• Parasites can cause a variety of diseases in humans and animals, leading to symptoms that range from mild discomfort to severe illness.
• They can also weaken the host's immune system and affect overall health.
• Fungi
• Fungi are a diverse group of eukaryotic organisms that include yeasts, moulds, and mushrooms.
• They are distinct from plants and animals and play essential roles in ecosystems.
• Fungi are decomposers, breaking down organic matter and recycling nutrients in ecosystems.
• They form symbiotic relationships with plants (mycorrhizae) that enhance nutrient uptake.
• Bacteria
• Bacteria are unicellular microorganisms that can be found in various environments, including soil, water, and the human body.
• They are prokaryotic, meaning they lack a nucleus.
• Bacteria can be classified as beneficial (e.g., gut microbiota aiding digestion, nitrogen-fixing bacteria in soil) or harmful (e.g., pathogens causing diseases like tuberculosis and strep throat).

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Q8. Answer: (b) Sudarshan Sahoo

The correct answer is Sudarshan Sahoo

Key Points

• Sudarshan Sahoo, an eminent Indian sculptor known for his exceptional work in stone and wood, was conferred the Padma Vibhushan in 2021.

• The Padma Vibhushan is the second-highest civilian award in India, recognizing exceptional and distinguished service in any field.

Additional Information

• Keshubhai Patel: A prominent Indian politician and former Chief Minister of Gujarat, Keshubhai Patel passed away in 2020, so he was not awarded in 2021.

• Sumitra Mahajan: A senior politician and former Speaker of the Lok Sabha, she has been influential in Indian politics, but she was not awarded the Padma Vibhushan in 2021.

• Jagdish Chaudhary: There are no records of him being awarded the Padma Vibhushan in 2021.

Q9. Answer: (a) New Delhi

The correct answer is New Delhi

Key Points

• The Archaeological Survey of India (ASI) is the premier organization responsible for archaeological research and the conservation of cultural heritage in India.

• Its headquarters is located in New Delhi.

• The ASI was established in 1861 and is tasked with the protection and preservation of ancient monuments, sites,

• and archaeological findings across the country, making it a key institution in preserving India's rich historical heritage.

• Sir Alexander Cunningham, a British army engineer and archaeologist, is considered the founder of the ASI.

• He was the first Director General of the organization and played a crucial role in its establishment and early operations.

• The ASI conducts extensive archaeological surveys and excavations to discover and study ancient sites, monuments, and artifacts.

Q10. Answer: (c) Neither conclusions A nor B follows.

According to the given information:

Conclusions:

(A) Exercises are not essential for youngsters. - False (The statement does not mention youngsters or suggest that exercises are unnecessary for them. It only talks about aged persons avoiding vigorous exercises. Therefore, there’s no logical basis to conclude that exercises are not essential for youngsters.)

(B) Vigorous exercises can cause damage to tendons. - False (The statement does not provide any reasoning or explanation about why vigorous exercises should be avoided by aged persons. It could be due to a variety of reasons unrelated to tendons (e.g., heart health or general strain). Since tendon damage is not mentioned or implied, this conclusion does not logically follow.)

Hence, the correct answer is "Neither conclusions A nor B follows".

Q11. Answer: (d) 15

Given:

√(217 + √(50 + √196))

Formula Used:

√x = y where y × y = x

Calculation:

√196 = 14

So, the expression becomes:

√(217 + √(50 + 14))

√(50 + 14) = √64 = 8

Now, the expression is:

√(217 + 8) = √225

√225 = 15

The value is 15.

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Q12. Answer: (a) A - (4), B - (3), C - (1), D - (2)

The correct answer is A - (4), B - (3), C - (1), D - (2)

Key Points

• The correct matching of the companies with their headquarters:

• A. Bharat Heavy Electricals Limited (BHEL) - 4. New Delhi

• Bharat Heavy Electricals Limited (BHEL)

• Headquarters: New Delhi

• BHEL is one of India's largest engineering and manufacturing companies, specializing in the design, engineering, construction, and maintenance of a wide range of power plants and energy systems.

• It plays a crucial role in India's power sector, producing equipment for thermal, hydro, and nuclear power generation.

• BHEL was founded in 1964 and has since contributed significantly to India's industrial growth and self-reliance in power generation equipment.

• B. Coal India Limited - 3. Kolkata

• Headquarters: Kolkata

• Coal India Limited (CIL) is the largest coal-producing company in the world and plays a pivotal role in the Indian economy, supplying coal to various sectors, including power generation, steel production, and cement manufacturing.

• It operates several subsidiaries and manages coal mining operations across India.

• CIL was incorporated in 1975 and is a state-owned enterprise under the Ministry of Coal, Government of India.

• C. Bharat Petroleum Corporation Limited (BPCL) - 1. Mumbai

• Headquarters: Mumbai

• BPCL is a major oil and gas company in India, involved in the refining, distribution, and marketing of petroleum products.

• It operates refineries, and retail outlets, and has a significant presence in the LPG market.

• BPCL is known for its commitment to quality and service in the energy sector.

• Originally founded as Burmah Oil Company in 1886, BPCL was nationalized in 1976 and has since been a key player in the Indian oil and gas sector.

• D. Bharat Electronics Limited (BEL) - 2. Bengaluru

• Headquarters: Bengaluru

• BEL is a state-owned aerospace and defence company that specializes in the design, development, and manufacture of advanced electronic products and systems for the defence and civilian sectors. Its product portfolio includes radars, communication systems, and electronic warfare systems.

• It was Founded in 1954, BEL has played a significant role in enhancing India's defence capabilities and technological advancements.

Q13. Answer: (a) Banyan

The correct answer is Banyan

Key Points

• The Banyan tree (Ficus benghalensis) is the National Tree of India.

• It is known for its expansive canopy and aerial roots, symbolizing longevity, strength, and resilience.

• In Indian culture, the Banyan tree holds a significant place in mythology and rural life,

• often serving as a gathering place in villages and a symbol of shelter and protection.

Additional Information

• Peepal Tree (Ficus religiosa)

• The Peepal tree is highly revered in India, especially in Hinduism and Buddhism.

• It is considered sacred, often associated with Lord Vishnu in Hinduism and as the tree under which Gautama Buddha attained enlightenment.

• It is Known for its heart-shaped leaves and long lifespan, the Peepal tree represents wisdom, spirituality, and enlightenment.

• The Peepal tree releases oxygen even at night, making it highly beneficial to the environment.

• Sal Tree (Shorea robusta)

• The Sal tree is significant in Indian and Southeast Asian traditions.

• In Buddhism, it is believed that Queen Maya, the mother of Buddha, gave birth to him while holding the branch of a Sal tree.

• The Sal tree produces durable hardwood, which is widely used in construction and furniture-making in India.

• Sal forests are essential for local ecosystems, providing shelter and food for many wildlife species.

• Mango Tree (Mangifera indica)

• The Mango tree holds an iconic place in Indian culture and is often called the “king of fruits.”
• Mango leaves and fruits are widely used in religious ceremonies, and festivals, and as symbols of prosperity and abundance.
• Mango is one of India’s most important fruit crops, with varieties like Alphonso and Banganapalli being highly popular.
• The mango tree is a symbol of love and fertility, and its fruits are widely cherished for their delicious taste.

Q14. Answer: (c) 8 : 7

Given:
35% of A's income = 40% of B's income
Formula Used:
To find the ratio of A's income to B's income, use the equation:
0.35A = 0.40B
Calculation:
Given: 0.35A = 0.40B
Divide both sides by 0.35
=> A = (0.40 / 0.35)B
=> A = (4 / 3.5)B
=> A = (8 / 7)B
Thus, the ratio of A's income to B's income is 8 : 7.
The correct answer is option 3.

Q15. Answer: (a) 5/14

Given:
Total people in the group = 4 men + 3 women + 2 boys = 9 people
We are selecting 3 persons randomly and want the probability that exactly 2 men are selected.
Formula used:
Probability = (Favorable outcomes)/(Total possible outcomes)
Total number of ways to select 3 persons from 9 = binom93
The number of ways to select 2 men from 4 men = binom42
The number of ways to select 1 person from the remaining 5 (3 women + 2 boys) = binom51
Calculations:
=> Total possible outcomes = binom93 = (9 × 8 × 7)/(3 × 2 × 1) = 84
=> Favorable outcomes (2 men and 1 other person) = binom42 × binom51 = (4 × 3)/(2 × 1) × 5 = 6 × 5 = 30
=> Probability = 30/84 = 5/14
Therefore The probability that 2 men are selected is 5/14.

Q16. Answer: (a) North

Given: Nisha daily goes to play badminton in a playground.
1) The playground is in the south direction from her house.
2) From the playground, she goes to her friend Suman's house that is in the west direction from the playground.
3) From Suman's house, both Nisha and Suman go to a market.
4) The market is in the west direction from Suman's house.
Final arrangement:
So, the direction of Nisha's home from the playground is North.
Hence, the correct answer is "North".

Q17. Answer: (b) 1955

The correct answer is 1955
Key Points
• Jawaharlal Nehru laid the foundation stone of the National Museum in New Delhi on May 12, 1955.
• The National Museum was officially inaugurated later, on December 18, 1960,
• It is one of the largest museums in India, housing a vast collection of artefacts from India's rich history, including archaeology, decorative arts, anthropology, and more.
• The concept for a national museum was first proposed in 1946, with an exhibition of Indian artefacts in London that showcased

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Indian art and heritage to the world.

• The success of that exhibition inspired the creation of a permanent museum in India to preserve and display its artefacts domestically.

• Its collection includes items from the Indus Valley Civilization, Mauryan sculptures, Buddhist artefacts, Mughal miniatures, and much more.

Q18. Answer: (b) Jawaharlal Nehru

The correct answer is Jawaharlal Nehru

Key Points

• Jawaharlal Nehru served as the Prime Minister of India for the longest duration.

• He held office from August 15, 1947, to May 27, 1964, a total of nearly 17 years until his death in 1964.

• As India's first Prime Minister, Nehru was instrumental in shaping the newly independent nation's policies and establishing democratic governance, industrial growth, education, and foreign policy frameworks.

Additional Information

• Comparison with Other Prime Ministers

• Manmohan Singh (2004–2014): Served two consecutive terms for approximately 10 years.

• Atal Bihari Vajpayee: Served for a combined total of around 6 years (first briefly in 1996 and then from 1998 to 2004).

• Narendra Modi (2014–present): As of now, he has served for over 10 years and is in his second term.

• If he continues in office, he may eventually approach or surpass Nehru's tenure, depending on future election results.

Q19. Answer: (d) Linux

The correct answer is Linux

Key Points

• Ubuntu, Mint, and Fedora are all versions of Linux, an open-source operating system.

• A Linux distribution based on Debian that's suitable for desktops, servers, cloud computing, and IoT devices.

• Ubuntu offers different desktop environments, including GNOME, KDE, and Xfce

• Linux Mint

• A free and open-source operating system that's based on Debian and Ubuntu.

• Linux Mint uses the Cinnamon desktop environment, which offers a traditional desktop experience.

• It's easy to use, requires little maintenance, and is community-centric

• Fedora

• Uses the DNF package manager, which is a successor of YUM.

• Linux is a robust, stable, and reliable operating system with many features, including

• An open-source philosophy that encourages collaboration and innovation, High customizability, Rapid response to vulnerabilities, Excellent security features, and Efficiency and resource utilization.

Additional Information

• Windows 10

• User Interface: Modern GUI with a Start menu, taskbar, and support for touchscreen devices.

• Target Audience: General consumers and professionals, suitable for a wide range of devices.

• Key Features: Built-in virtual desktops, regular updates, and deep integration with Microsoft services like OneDrive and Office.

• MS-DOS

• Interface: Command-Line Interface (CLI) with text-based commands, no graphical elements.

• Single-Tasking: Only one program runs at a time, suitable for simpler tasks.

• Key Use: File management and basic program operations in early personal computers.

• Apple macOS X

• User Interface: Intuitive GUI with a Dock and Finder for managing files and applications.

• Target Audience: General users, creative professionals, and developers, with smooth Apple ecosystem integration.

• Key Features: Unix-based, known for stability, security, and multimedia capabilities.

Q20. Answer: (b) 2%

Given:

Initial population = 1,85,500

Final population = 2,22,600

Number of years = 10

Formula Used:

Average percentage increase per year = ((Final Population - Initial Population)/(Initial Population × Number of Years)) × 100

Calculation:

Population increase = 2,22,600 - 1,85,500

Population increase = 37,100

Average percentage increase per year = ((37,100)/(1,85,500 × 10)) × 100

=> Average percentage increase per year = ((37,100)/(18,55,000)) × 100

=> Average percentage increase per year = 0.02 × 100

=> Average percentage increase per year = 2%

The average percentage increase of population per year is 2%.

Q21. Answer: (d) T

According to the given information:

1) Age of no two boys is same.

2) Only four boys are younger that Q.

_ > Q > _ > _ > _ > _

3) S is elder to P and R.

S > P / R

4) T is elder to W and S.

T > W / S

So, there can be multiple cases here:

Case 1: T > Q > S > W > P > R

Case 2: T > Q > W > S > P > R

Case 3: T > Q > W > S > R > P

Case 4: T > Q > S > W > R > P

Case 5: T > Q > S > R > P > W

Thus, T is the eldest amongst them in all cases.

Hence, the correct answer is "T".

Q22. Answer: (c) New Delhi

The correct answer is New Delhi

Key Points

• The Sangeet Natak Akademi, India's national academy for music, dance, and drama, is located at Rabindra Bhawan, 35 Feroze Shah Road, New Delhi

• The Sangeet Natak Akademi is an autonomous body of the Ministry of Culture, Government of India.

• It was established in 1953 and inaugurated by Dr. Rajendra Prasad in Parliament House.

• The academy aims to promote and preserve India's cultural heritage through music, dance, and drama.

• The Sangeet Natak Akademi houses a unique archive that includes recordings, photographs, and manuscripts significant to Indian arts.

• Additionally, it operates specialized centres, such as the Kathak Kendra in New Delhi.

• which focuses on Kathak dance, and Ravindra Rangshala in various locations for theatre.

• It also manages projects like the National Project on Intangible Cultural Heritage (ICH),

• aimed at documenting and conserving intangible cultural expressions across the country.

Q23. Answer: (b) 1^(st) April 1935

The correct answer is 1st April 1935

Key Points

• The Reserve Bank of India (RBI) was established on April 1, 1935:

• The RBI was established by the Reserve Bank of India Act, of 1934.

• The RBI was created to respond to economic challenges after World War I.

• The RBI was established based on the recommendations of the 1926 Royal Commission on Indian Currency and Finance, also known as the Hilton Young Commission.

• Sir Osborne Smith was the first Governor of the RBI.

• The RBI's Central Office was initially in Kolkata but was permanently moved to Mumbai in 1937.

• The RBI's original functions included regulating the issue of banknotes, maintaining reserves, and operating the country's credit and currency system.

• The RBI is India's central bank, and it regulates monetary policies, operates under the Government of India, and undertakes various initiatives for the financial sector.

Q24. Answer: (c) B, C, A

The correct answer is B, C, A

Key Points

• Uttar Pradesh is the largest producer of sugarcane in India, contributing a significant portion of the country’s total production due to its favourable climatic conditions and extensive cultivation practices.

• Maharashtra ranks second in sugarcane production.

• The state has several sugar mills and a well-established sugar industry, contributing to its high production levels.

• Karnataka is also a significant producer of sugarcane, but it ranks third compared to Uttar Pradesh and Maharashtra.

• India is the second-largest producer of sugar in the world and is also the largest consumer.

• Brazil is the largest sugar-producing country in the world.

• Uttar Pradesh, the leading sugarcane and sugar-producing State in India.

Q25. Answer: (d) 1686

Given:

Invalid votes = 86

Winning candidate's percentage = 58%

Winning margin = 256 votes

Formula Used:

Let the total number of valid votes be V.

Let the total number of votes polled be T.

Winning candidate's votes = 0.58V

Other candidate's votes = 0.42V

Winning margin = 0.58V - 0.42V

T = V + 86

Calculation:

Winning margin = 256 votes

=> 0.58V - 0.42V = 256

=> 0.16V = 256

=> V = 256/0.16

=> V = 1600

Total number of votes polled

=> T = V + 86

=> T = 1600 + 86

=> T = 1686

The total number of votes polled is 1686.

Q26. Answer: (a) 15^(th) February 2019

The correct answer is 15th February 2019

Key Points

• Prime Minister Narendra Modi flagged off India's first semi-high-speed train, the Vande Bharat Express, on February 15, 2019, at New Delhi railway station.

• The train ran on the New Delhi–Kanpur–Allahabad–Varanasi route, connecting Uttar Pradesh's Varanasi to the capital city.

• The train's top speed is 160 kilometres per hour.

• some other facts about the Vande Bharat Express:

• The train was previously known as Train 18.

• It was designed and manufactured by the Integral Coach Factory (ICF), Chennai, which is owned by the government.

• The train has two classes of accommodation: AC Executive Class and AC chair.

• The train offers onboard catering with vegetarian and non-vegetarian meal options.

• The train's coaches have wider windows with roller blinds, overhead racks for luggage, electric outlets, reading lights, CCTV cameras, automatic doors, bio-vacuum toilets, and sensor-based water taps.

Q27. Answer: (c) 1.665

Given:

If √225 = 15, then the value of √2.25 + √0.0225 + √0.000225 is:

Formula Used:

$\sqrt{(a \times 10^{2n})} = \sqrt{a} \times 10^{n}$

Calculation:

√2.25 = √(225 × 10^(-2))

=> √225 × 10^(-1)

=> 15 × 0.1

=> 1.5

√0.0225 = √(225 × 10^(-4))

=> √225 × 10^(-2)

=> 15 × 0.01

=> 0.15

√0.000225 = √(225 × 10^(-6))

=> √225 × 10^(-3)

=> 15 × 0.001

=> 0.015

Therefore, √2.25 + √0.0225 + √0.000225

=> 1.5 + 0.15 + 0.015

=> 1.665

The correct answer is option 3.

Q28. Answer: (c) 1913

The correct answer is 1913

Key Points

• Rabindranath Tagore was a Bengali poet, writer, and painter.

• He was honoured with the Nobel Prize in Literature in 1913.

• He is the first non-European to receive the Nobel Prize for Literature.

• Rabindranath Tagore got the Nobel Prize for his work Gitanjali.

• India's national anthem" Jana Gana Mana" was written by Rabindranath Tagore.

• He also created Bangladesh's national anthem, "Amar Shonar Bangla".

• Shanti Niketan is the school established by Rabindranath Tagore.

• Rabindranath Tagore first sang Vande Mataram in 1896 at the Calcutta Congress Session.

• Notable works:

• Gitanjali.

• Ghare-Baire.

• Gora,

• Gitimalya.

• Balaka.

• Sonar Tari.

Q29. Answer: (b) 9

Given:

Number 1 = 39

Number 2 = 84

Remainder in each case = 3

Formula Used:

Greatest number that divides both a and b leaving the same remainder r is gcd(a-r, b-r)

Calculation:

Adjusted numbers after subtracting remainder:

Number 1 - Remainder = 39 - 3 = 36

Number 2 - Remainder = 84 - 3 = 81

Find gcd(36, 81):

Prime factorization of 36: $2^2 \times 3^2$

Prime factorization of 81: 3^4

Common factors: 3^2

=> gcd(36, 81) = 9

The greatest number, which will divide 39 and 84 to leave remainder 3 in each case, is: 9.

Q30. Answer: (c) 3/7

Given:

Total black balls = 10

Total white balls = 5

Total balls = 15

Formula Used:

Probability of drawing two black balls without replacement = (Probability of drawing the first black ball) × (Probability of drawing the second black ball after the first one is drawn)

Calculation:

Probability of drawing the first black ball = 10/15

Probability of drawing the second black ball after the first one is drawn = 9/14

=> Probability of drawing two black balls = (10/15) × (9/14)

=> Probability of drawing two black balls = (10 × 9) / (15 × 14)

=> Probability of drawing two black balls = 90 / 210

=> Probability of drawing two black balls = 3/7

The probability that both drawn balls are black is 3/7.

Q31. Answer: (d) 1416310136

The logic followed here is: Letter + 1 = Number

Chair : 4921019

Similarly, Mobile : ?

Hence, the correct answer is "1416310136".

Q32. Answer: (d) 49/9

Given:

a/b = 0.75

Calculation:

a/b = 0.75

=> a = 0.75b

Substitute a = 0.75b into the expression (2a + b)/(2a - b) + 4/9

=> (2(0.75b) + b)/(2(0.75b) - b)

=> (1.5b + b)/(1.5b - b)

=> 2.5b/0.5b

=> 5

Now, add 4/9 to 5

=> 5 + 4/9

=> 45/9 + 4/9

=> 49/9

The correct answer is option 4: 49/9.

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Q33. Answer: (c) TIZBN

The logic followed here is:

RAM is written as SBN

Similarly, SHYAM will be written:

Hence, the correct answer is "TIZBN".

Q34. Answer: (a) 15

According to the given information:

Thus, female writers are Bengali = 15.

Hence, the correct answer is "15".

Q35. Answer: (d) Germanium

The correct answer is Germanium

Key Points

• Germanium is a metalloid, which is a chemical element with properties that are a mix of those of metals and nonmetals:

• Metalloids are brittle, lustrous, and have a metallic appearance.

• They are intermediate conductors of electricity and are generally semiconductors.

• Chemically, they behave mostly as nonmetals.

• Examples

• Other examples of metalloids include boron, silicon, arsenic, antimony, and tellurium.

• Metalloids are located on the periodic table bordering the staircase, between the metals on the left and the non-metals on the right.

Additional Information

• Iodine is vital for health and medicine.

• Iodine is a dark, bluish-black solid at room temperature and sublimates to form a violet vapour.

• It is essential for human health, particularly in the production of thyroid hormones.

• Copper is crucial for electrical and plumbing applications.

• Copper is a reddish-brown metal known for its high electrical and thermal conductivity.

• It is malleable and ductile, making it easy to shape and work with.

• Carbon is fundamental to life and widely used in multiple industries.

• Carbon is a versatile element that can form various allotropes, including graphite, diamond, and amorphous carbon

Q36. Answer: (d) 68

The logic followed here is:

8, 12, 20, 32, 48, ?

Hence, the correct answer is "68".

Q37. Answer: (a) 1911-1921

The correct answer is "1911 - 1921".

Key Points

• According to the most recent census, India's population has grown, yet between 1911 and 1921, it actually decreased.

• Before 1921, both male and female children had poor life expectancy rates at birth.

• Famines and epidemics were the leading causes of population reduction.

• Famine, pestilence, and influenza deaths slowed the country's population growth.

• There was an increase in population from 1901 to 1911.

• Due to the absence of famines and epidemics during this time, resulting in a significant drop in the country's death rate, the population expanded by roughly 158 lakh.

• However, between 1911 and 1921, the nation's growth rate slowed.

• The 1918 influenza outbreak contributed to a rise in mortality and the death of 140 lakh people nationwide.

• Famine, the plague, and malaria were further factors in the population reduction.

• The year 1951 is frequently referred to as the year of the population explosion since there was a significant increase in population after 1951.

Additional Information

Growth of Population

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Phase I

• The period from 1901-1921 is referred to as a period of the stagnant or stationary phase of growth of India's population, since in this period growth rate was very low, even recording a negative growth rate during 1911-1921.

• Both the birth rate and death rate were high keeping the rate of increase low.

• Poor health and medical services, illiteracy of people at large, and inefficient distribution system of food and other basic necessities were largely responsible for high birth and death rates in this period.

Phase II

• The decades 1921-1951 are referred to as the period of steady population growth.

• An overall improvement in health and sanitation throughout the country brought down the mortality rate.

• At the same time, better transport and communication systems improved distribution systems.

• The crude birth rate remained high in this period leading to a higher growth rate than the previous phase.

• This is impressive in the backdrop of the Great Economic Depression, the 1920s, and World War II.

Phase III

• The decades 1951-1981 are referred to as the period of population explosion in India, which was caused by a rapid fall in the mortality rate but a high fertility rate of population in the country.

• The average annual growth rate was as high as 2.2 percent.

• It is in this period, after the Independence, that developmental activity was introduced through a centralized planning process and the economy started showing up ensuring the improvement of the living conditions of people at large.

• Consequently, there was a high natural increase and a higher growth rate.

• Besides, increased international migration bringing in Tibetans, Bangladeshis, Nepalese and even people from Pakistan contributed to the high growth rate.

Phase IV

• In the post-1981 till present, the growth rate of country's population though remained high, has started slowing down gradually.

• A downward trend of crude birth rate is held responsible for such population growth.

• This was, in turn, affected by an increase in the mean age at marriage, improved quality of life particularly education of females in the country.

• The growth rate of population is, however, still high in the country, and it has been projected by World Development Report that the population of India will touch 1,350 million by 2025.

Q38. Answer: (c) D, B, A, C

The correct answer is Option 3.

Key Points

• To arrange the names of the Indian presidents in the descending order of their tenure:

• Giani Zail Singh (1982-1987)

• Neelam Sanjiva Reddy (1977-1982)

• Fakhruddin Ali Ahmed (1974-1977)

• Dr. Zakir Hussain (1967-1969)

Additional Information

• Giani Zail Singh served as the 7th President of India from 25 July 1982 to 25 July 1987.

• Neelam Sanjiva Reddy served as the 6th President of India from 25 July 1977 to 25 July 1982.

• Fakhruddin Ali Ahmed served as the 5th President of India from 24 August 1974 until his death on 11 February 1977.

• Dr. Zakir Hussain served as the 3rd President of India from 13 May 1967 until his death on 3 May 1969.

Q39. Answer: (d) Cholera

The correct answer is Cholera

Key Points

• Cholera does not spread through the air, and is instead a waterborne disease:

• Cholera

• A waterborne disease that is primarily transmitted through contaminated food and water.

• Airborne diseases

• Diseases that are caused by pathogens and transmitted through the air, such as the common cold, pneumonia, and tuberculosis.

• Pathogens can be viruses, bacteria, or fungi, and are spread through coughing, sneezing, dust, and spraying of liquids.

• HIV-AIDS is another disease that does not spread through the air but is instead sexually transmitted.

• It can be transmitted through direct sexual contact, using infected blood or syringe, and from the infected mother to its child during pregnancy or via breastfeeding

Additional Information

• Pneumonia is an infection that inflames the air sacs in one or both lungs, which may fill with fluid or pus, causing cough with phlegm or pus, fever, chills, and difficulty breathing

• Pneumonia can be caused by various pathogens,

• including bacteria (e.g., Streptococcus pneumoniae), viruses (e.g., influenza virus), and fungi. It can also develop after inhaling irritants or as a complication of another illness.

• Tuberculosis is a contagious bacterial infection caused by Mycobacterium tuberculosis, primarily affecting the lungs but can also impact other parts of the body.

• TB is spread through airborne particles when an infected person coughs or sneezes.

• Close and prolonged contact with an infected person increases the risk of transmission.

• The common cold is a viral infection of the upper respiratory tract, primarily caused by rhinoviruses.

• Cold viruses are highly contagious and can be spread through respiratory droplets, direct contact with infected surfaces, or close contact with an infected person.

Q40. Answer: (b) 0

Given:

x : y = 3 : 5

Calculation:

Given x : y = 3 : 5

Let x = 3k and y = 5k

Substitute x and y into the formula:

=> (5x - 3y)/(10x + 6y)

=> (5(3k) - 3(5k))/(10(3k) + 6(5k))

=> (15k - 15k)/(30k + 30k)

=> 0/60k

=> 0

The correct answer is option 2.

Q41. Answer: (a) EJ

The logic followed here is:

Given series: AF, BG, CH, DI, ?

Hence, the correct answer is "EJ".

Q42. Answer: (d) B. S. Chandrasekhar

The correct answer is B S Chandrasekhar

Key Points

• B. S. Chandrasekhar:

• He was a prominent leg-spin bowler and is renowned for his exceptional bowling skills, particularly during the 1970s and 1980s.

• He did not play as a wicketkeeper.

• He is well-known for his exceptional bowling, which earned him a reputation as one of the greatest spinners in the history of cricket.

• He played a key role in many of India's victories, particularly in Tests against strong teams.

• He took over 200 Test wickets and was known for his unique bowling action and ability to spin the ball sharply.

Additional Information

• P. G. Joshi

• Full Name: Prakash Ganesh Joshi

• Role: Wicketkeeper-Batsman

• Joshi played for India in the late 1970s and early 1980s. He was known for his skills behind the stumps and also contributed as a lower-order batsman.

• He was a part of the Indian squad during a time when wicketkeeping was crucial, especially in Test matches.

• F. M. Engineer

• Full Name: Farokh Maneksha Engineer

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• Role: Wicketkeeper-Batsman

• Engineer played for India from 1961 to 1975 and is remembered as one of the best wicketkeepers of his time.

• He played a significant role in the Indian cricket team and was part of the team that reached the semi-finals of the 1975 Cricket World Cup.

• He was known for his agile wicketkeeping skills and his ability to play crucial innings.

• N. S. Tamhane

• Full Name: Narayan Shripad Tamhane

• Role: Wicketkeeper-Batsman

• Tamhane was active in the 1950s and is known for his role as a wicketkeeper in the Indian cricket team.

• He played in the early days of Indian Test cricket.

• While his playing career was shorter than some of his contemporaries, he contributed to the development of wicketkeeping in Indian cricket during his time

Q43. Answer: (b) 755201

The logic followed here is: Letter coded by its place value.

SACHIN is written as 19138914

Similarly, GEETA will be written as:

Hence, the correct answer is "755201".

Q44. Answer: (a) Kolkata

The correct answer is Kolkata

Key Points

• The fifth India International Science Festival (IISF) was held in Kolkata from November 5–8, 2019.

• The festival was organized by the Ministry of Science & Technology, Earth Sciences, and Health & Family Welfare, in association with Vijnana Bharati (VIBHA).

• The theme for the 2019 festival was "RISEN India – Research, Innovation, and Science Empowering the Nation".

• The festival featured cultural activities such as plays, musical yoga, Nukkad Natak, dance, and recital performances.

• It also included the International Science Literature Festival, Vigyanika.

• The IISF is an annual event that promotes science and technology by demonstrating how STEM (science, technology, engineering, and mathematics) can improve lives

Q45. Answer: (b) 1 GB = 2^(20) byte

The correct answer is 1 GB= 220 byte

Key Points

• 1 GB = 220 byte: This statement is incorrect because it suggests that 1 GB is equal to 2202^{20}220 bytes, which is actually 1 MB (Megabyte).

• Here are the sizes of some storage units in a computer system:

• Kilobyte (KB): 210 bytes

• Megabyte (MB): 220 bytes

• Gigabyte (GB): 230 bytes

• Terabyte (TB): 240 bytes

• Larger storage units include petabytes (PB), exabytes (EB), zettabytes (ZB), and yottabytes (YB)

Q46. Answer: (d) Mundaka Upanishad

The correct answer is Mundaka Upanishad.

• The words - “Satyameva Jayate”, inscribed on the state emblem of India, has been taken from Mundaka Upanishad.

Key Points

• The State Emblem is an adaptation from the Sarnath Lion Capital of Ashoka.

• In the State Emblem, adopted by the Government of India on 26 January 1950 only three lions are visible, the fourth being hidden from view.

• The wheel appears in the centre of the abacus with a bull on the right and a horse on the left and the outlines of other wheels on the extreme right and left.

• The bell-shaped lotus has been omitted.

• The words Satyameva Jayate from Mundaka Upanishad, meaning ‘Truth Alone Triumphs, are inscribed below the abacus in Devanagari script.

Additional Information

• The song Jana-Gana-mana, composed originally in Bengali by Rabindranath Tagore, was adopted in its Hindi version by the Constituent Assembly as the National Anthem of India on 24 January 1950.

• It was first sung on 27 December 1911 at the Kolkata Session of the Indian National Congress.

Q47. Answer: (b) Airport Authority of India

The correct answer is Airport Authority of India

Key Points

• The Indian Space Research Organization (ISRO) collaborated with the Airport Authority of India (AAI) to develop the GPS-Aided Geo Augmented Navigation (GAGAN) system.

• GAGAN is a space-based augmentation system (SBAS) that uses a network of satellites and ground stations to improve the accuracy of GPS signals.

• It corrects for errors caused by satellite orbit, timing, and ionospheric disturbances. GAGAN also provides information about the health of each satellite.

• GAGAN is designed to provide navigational services over India's Flight Information Region (FIR) and can be expanded to neighbouring FIRs.

• The Directorate General of Civil Aviation (DGCA) provisionally certified GAGAN in 2012.

Additional Information

• Hindustan Aeronautics Limited (HAL)

• Headquarters: Bengaluru, Karnataka

• HAL is an Indian state-owned aerospace and defence company.

• It is primarily involved in the design, development, manufacturing, and maintenance of aircraft, helicopters, engines, and avionics for both military and civilian sectors.

• HAL has been a significant player in Indian defence with projects like the Tejas light combat aircraft, Dhruv advanced light helicopter, and the manufacturing of aircraft for the Indian Air Force.

• Cochin Shipyard Limited (CSL)

• Headquarters: Kochi, Kerala

• CSL is the largest shipbuilding and maintenance facility in India, owned by the Government of India. It specializes in shipbuilding and ship repair services and undertakes the construction of ships for commercial and defence sectors.

• CSL is known for building India's first indigenous aircraft carrier, INS Vikrant, and for its capabilities in ship repair and maintenance for various Indian Navy and Coast Guard vessels.

• Pawan Hans Helicopters Limited

• Headquarters: Noida, Uttar Pradesh

• Pawan Hans is a leading helicopter service provider in India, serving various sectors, including offshore oil operations, tourism, pilgrimage, and medical evacuation. It also provides helicopter services to government and private entities.

• Pawan Hans operates a fleet of helicopters across India and is known for offering services in remote and hilly terrains where fixed-wing aircraft may not be viable.

Q48. Answer: (a) Gandhinagar, Gujarat

The correct answer is Gandhinagar, Gujarat

Key Points

• The Festival of Innovation & Entrepreneurship (FINE) is organized to celebrate and promote innovation and entrepreneurship among young minds in India.

• The event serves as a platform for innovators to showcase their work and engage with potential investors and mentors.

• The inaugural event took place at the Raj Bhavan in Gandhinagar, Gujarat, highlighting the state's role in fostering innovation and entrepreneurship in the country.

• The festival included various activities, such as exhibitions, workshops, and discussions focused on promoting innovation across different sectors.

Q49. Answer: (a) 15/16

Given:

a/b = 3/2 and b/c = 3/5

We need to find the value of (a + b)/(b + c)

Formula used:

Substitute the values of abab and bcbc to express a, b, and c in terms of one variable.

Calculations:
From a/b = 3/2, we get a = 3/2b
From b/c = 3/5, we get c = 5/3b
Now, substitute these into (a + b)/(b + c) :
=> (3/2b + b)/(b + 5/3b)
Factor out bb from both the numerator and denominator:
=> (b(3/2 + 1))/(b(1 + 5/3))
Cancel out b:
=> (3/2 + 1)/(1 + 5/3)
Simplify both the numerator and the denominator:
=> (5/2)/(8/3)
=> 5/2 × 3/8 = 15/16
Therefore The value of (a + b)/(b + c) is 15/16.

Q50. Answer: (a) Kgms^(-2)

The correct answer is Kgms-2.
Key Points
• The unit of force in the International System of Units (SI) is the Newton (N).
• 1 Newton is defined as the force required to accelerate a mass of 1 kilogram at a rate of 1 meter per second squared (1 m/s²).
• Force is defined as an interaction that changes the state of rest or uniform motion of an object.
• Mathematically: Force (F)=mass (m)×acceleration (a), So, 1 Newton = 1 kg·m/s².
Additional Information

Quantity	SI unit	Symbol
Length	meter	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Amount of substance	mole	mol
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd

Q51. Answer: (c) Kgm /sec²

The correct answer is Kgm /sec2.
Key Points
• Work is calculated as Work (W)=Force (F)×Displacement (d).
• The SI unit of work is the Joule (J). Since force is measured in Newtons (N) and displacement in meters (m), we have 1J=1N?m.
• Also, from Newton's second law, a Newton (N) can be expressed as 1N=1kg?m/s².
• kg·m²/s² is dimensionally equivalent to a Joule. This is a unit of work.
Additional Information

Quantity	SI unit	Symbol
Length	meter	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Amount of substance	mole	mol
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd

Q52. Answer: (d) 9

According to the given information:

Thus, Sun are Ears = 8 + 1 = 9

Hence, the correct answer is "9".

Q53. Answer: (a) Madrid, Spain

The correct answer id Madrid, Spain.

Key Points

• The World Tourism Organization (UNWTO) was established in 1975.

• It evolved from the International Union of Official Travel Organizations (IUOTO), which was formed in 1925.

• In 2003, the UNWTO became a specialized agency of the United Nations.

• The UNWTO established World Tourism Day, celebrated annually on September 27 since 1980,

Additional Information

Organization	Date of formation	HQ's
United Nations (UN)	October 24, 1945	New York City, USA
United Nations Children's Fund (UNICEF)	December 11, 1946	New York City, USA
United Nations Educational, Scientific and Cultural Organization (UNESCO)	November 16, 1945	Paris, France
World Health Organization (WHO)	April 7, 1948	Geneva, Switzerland
United Nations Development Programme (UNDP)	November 22, 1965	New York City, USA
International Atomic Energy Agency (IAEA)	July 29, 1957	Vienna, Austria
Food and Agriculture Organization (FAO)	October 16, 1945	Rome, Italy
United Nations Environment Programme (UNEP)	June 5, 1972	Nairobi, Kenya
World Bank Group (WB)	July 1, 1944	Washington D.C., USA

Q54. Answer: (d) 9

Given:

Expression: 3 + [3 × {3 - (3 + 3) ÷ 6}]

Formula Used:

Order of operations (PEMDAS/BODMAS): Parentheses/Brackets, Exponents/Orders (i.e. powers and roots, etc.), Multiplication and Division (left-to-right), Addition and Subtraction (left-to-right)

Calculation:

Simplify the innermost parentheses first:

(3 + 3) = 6

Next, simplify the division:

6 ÷ 6 = 1

Substitute back into the expression:

3 + [3 × {3 - 1}]

Continue simplifying inside the brackets:

3 - 1 = 2

Now multiply:

3 × 2 = 6

Finally, add:

3 + 6

=> 9

The correct answer is option 4: 9.

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Q55. Answer: (a) 127/10

Given:

56/5 + 51/10 ÷ 32/5

Formula used:

To solve the expression, we first need to perform division and addition using the basic rules for fractions and mixed numbers.

Calculations:

Step 1: Convert mixed numbers to improper fractions.

51/10 = 51/10

32/5 = 17/5

Step 2: Perform the division.

=> 51/10 ÷ 17/5 = 51/10 × 5/17 = 255/170 = 51/34

Step 3: Now add the two fractions. 56/5 + 51/34

Step 4: Find a common denominator and perform the addition.

LCM of 5 and 34 is 170.

=> 56/5 = (56 × 34)/(5 × 34) = 1904/170

=> 51/34 = (51 × 5)/(34 × 5) = 255/170

Step 5: Add the fractions.

=> 255/170 + 1904/170

=> (1904 + 255)/170 = 2159/170

=> 127/10

Therefore The value of the expression is approximately 12 7/10.

Q56. Answer: (a) 84

Given:

2/3, 4/9, 7/12, 3/5

Formula Used:

LCM of fractions = (LCM of Numerators)/(HCF of Denominators)

Calculation:

Numerators: 2, 4, 7, 3

Denominators: 3, 9, 12, 5

LCM of Numerators = LCM(2, 4, 7, 3)

Prime Factorization:

2 = 2

4 = 2^2

7 = 7

3 = 3

LCM = $2^2 \times 3 \times 7 = 4 \times 3 \times 7$

LCM = 84

HCF of Denominators = HCF(3, 9, 12, 5)

Prime Factorization:

3 = 3

9 = 3^2

12 = $2^2 \times 3$

5 = 5

HCF = 1 (since 1 is the only common factor in all denominators)

LCM of fractions = (LCM of Numerators)/(HCF of Denominators) 841841

841

=> LCM = 84/1 = 84

The correct answer is option 1.

Q57. Answer: (c) 81

Given:

2160/(√ x) = 240

Formula Used:

√x = 2160/240

Calculation:

Rearrange the given equation to solve for √x:

=> √x = 2160/240

=> √x = 9

Now, square both sides to solve for x :

=> $x = 9^2$

=> x = 81

The value of x is 81.

Q58. Answer: (d) E, A, B, C, D

The correct answer is E, A, B, C, D.

Key Points

• Champaran Movement: In 1917, the Governor-General was Lord Chelmsford.

• Jallianwala Bagh Massacre: 1919, Governor-General was Lord Chelmsford.

• Khilafat Movement: 1919, Governor-General was Lord Chelmsford, Non-Cooperation Movement: 1920, Governor-General was Lord Reading.

• Gandhi-Irwin Pact: In 1931, the Governor-General was Lord Irwin.

• Quit India Movement: In 1942, the Governor-General was Lord Linlithgow.

Additional Information

Movement	Date	Governor-General
Partition of Bengal	1905	Lord Curzon
Ghadar Movement	1914	Lord Hardinge
Champaran Movement	1917	Lord Chelmsford
Khilafat Movement	1919	Lord Chelmsford
Non-Cooperation Movement	1920	Lord Reading
Jallianwala Bagh Massacre	1919	Lord Chelmsford
Kheda Satyagraha	1918	Lord Chelmsford
Salt Satyagraha (Dandi March)	1930	Lord Irwin
Gandhi-Irwin Pact	1931	Lord Irwin
Civil Disobedience Movement	1930-1934	Lord Irwin
Quit India Movement	1942	Lord Linlithgow

Q59. Answer: (d) GHI

The logic followed here is: 1st letter + 2 = 2nd letter; 2nd letter + 2 = 3rd letter.

Option 1) ACE

Option 2) PRT

Option 3) KMO

Option 4) GHI

Hence, the correct answer is "GHI".

Q60. Answer: (b) Eiha Dixit

The correct answer is Eiha Dixit.

Key Points

• Eiha Dixit won the Bal Shakti Puraskar 2019 in the field of social service for her contributions to the environment.

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• At the time of receiving the award, she was the youngest among all the recipients of the Bal Shakti Puraskar.

• Eiha Dixit is known for her efforts in promoting environmental sustainability and spreading awareness about the importance of protecting nature.

• he award she received is a prestigious honor given by the President of India to recognize children who excel in various fields.

Additional Information

• Angel Vijay Deokule is known for her achievements in the field of archery.

• She was recognized by the Bal Shakti Puraskar for her exceptional archery skills.

• Adrika Goyal is known for her innovations in the field of science and technology.

• She was honored with the Bal Shakti Puraskar for her contributions to innovation and technology.

• Truptraj Atul Pandya is a tabla prodigy who began playing the tabla at an incredibly young age.

• He holds the record for being the youngest tabla player to perform on All India Radio at the age of 3.

Q61. Answer: (c) 185

Given:

The HCF of two numbers = 37

Their LCM = 740

One of the numbers = 148

Formula Used:

Product of two numbers = HCF × LCM

Calculation:

Let the other number be x.

Product of the two numbers = 148 × x

HCF × LCM = 148 × x

=> 37 × 740 = 148 × x

=> 27380 = 148 × x

=> x = 27380 / 148

=> x = 185

The other number is 185.

Q62. Answer: (b) Article 74(1)

The correct answer is Article 74(1).

Key Points

• Article 74(1) of the Constitution of India deals with the formation and role of the Council of Ministers in the Indian government.

• The Article mandates the formation of a Council of Ministers, headed by the Prime Minister, to assist the President.

• The advice given by the Council of Ministers is binding on the President after the 42nd Amendment to the Constitution in 1976.

• The Prime Minister and the Council of Ministers effectively hold executive power, while the President's role is largely ceremonial in nature.

Additional Information

• Article 72(1) gives the President of India the power to grant pardons, reprieves, respites, or remissions of punishment, or to suspend, remit or commute the sentence of any person convicted of an offence.

• In cases where the punishment or sentence is for an offence against any law related to a matter to which the executive power of the Union extends.

• In cases of punishment by a court-martial.

• In cases where the sentence is a death sentence.

• Article 73(1) defines the extent of the executive power of the Union (Central Government)

• The executive power of the Union extends to matters on which Parliament has the power to legislate, i.e., matters in the Union List and Concurrent List (with conditions).

• The executive power of the Union also extends to giving directions to states where necessary for ensuring compliance with laws made by Parliament.

• Article 79(1) There shall be a Parliament for the Union which shall consist of the President and two Houses to be known respectively as the Council of States (Rajya Sabha) and the House of the People (Lok Sabha).

Q63. Answer: (c) Gulf of Kutch

The correct answer is Gulf of Kutch.

Key Points

• India's first marine national park is situated in the Gulf of Kutch, in the state of Gujarat.

• Marine National Park, Gulf of Kutch: It was established in 1982 and covers an area of 162.89 square kilometers.

• The area surrounding the Marine National Park has mangrove forests that provide breeding grounds for fish and other marine life. These forests play a vital role in stabilizing the coastal ecosystem.

• The Gulf of Kutch Marine Park is known for its coral reefs, including both fringing reefs and offshore platforms.

Additional Information

• The Gulf of Mannar is Situated between the southeastern coast of India (Tamil Nadu) and the western coast of Sri Lanka.

• It is part of the Gulf of Mannar Biosphere Reserve, which is the first marine biosphere reserve in India, established in 1989.

• Rameswaram Island is Located within the Gulf of Mannar, it is a popular pilgrimage site in India.

• Jamnagar is Situated in the state of Gujarat, on the western coast of India.

• Known for the world's largest oil refinery, operated by Reliance Industries.

• Chennai is the capital of the state of Tamil Nadu, located on the southeastern coast of India along the Bay of Bengal.

• Known as the "Detroit of India" due to its robust automobile industry.

Q64. Answer: (a) Judgement

The logic followed here is:

Bank and Loan is that a bank provides a loan.

Similarly,

Judgement as a court provides or issues a judgement.

Hence, the correct answer is "Judgement".

Q65. Answer: (d) Iran

The correct answer is Iran.

Key Points

• The name TAPI stands for the four countries involved: Turkmenistan, Afghanistan, Pakistan, and India.

• The TAPI pipeline aims to transport natural gas from Turkmenistan to India, passing through Afghanistan and Pakistan.

• The idea for the TAPI pipeline was first proposed in 1990. The project was officially launched in 2002.

• The pipeline will transport natural gas from the Galkynysh gas field in Turkmenistan, one of the largest gas fields in the world.

Additional Information

• Turkmenistan

• Location: Central Asia, bordered by the Caspian Sea to the west, Kazakhstan to the northwest, Uzbekistan to the northeast, Afghanistan to the southeast, and Iran to the south.

• Capital: Ashgabat.

• Official Language: Turkmen.

• Government: Turkmenistan is a presidential republic. The President holds significant power and authority.

• Iran

• Location: Western Asia, bordered by the Caspian Sea to the north, Turkmenistan and Afghanistan to the northeast, Pakistan to the southeast, and several countries to the west (including Iraq and Turkey).

• Capital: Tehran.

• Official Language: Persian (Farsi).

• Government: An Islamic Republic with a Supreme Leader holding significant power alongside an elected President.

• Afghanistan

• Location: South Asia and Central Asia, bordered by Turkmenistan, Uzbekistan, and Tajikistan to the north, Iran to the west, and Pakistan to the east and south.

• Capital: Kabul.

• Official Languages: Dari and Pashto.

• Government: Afghanistan has experienced various forms of governance, currently operating under the Taliban regime since 2021.

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Q66. Answer: (a) 1, 3

The correct answer is 1,3.

Key Points

• Tritium is one of the isotopes of hydrogen.

• The atomic number of hydrogen, including its isotopes, is 1 (since all hydrogen isotopes have one proton).

• Tritium has 2 neutrons in addition to the 1 proton, giving it a mass number of 3 (1 proton + 2 neutrons = 3).

• Tritium is radioactive, with a half-life of about 12.32 years, decaying into helium-3 (^{3}He) through beta decay.

Additional Information

• Protium (^{1}H) Atomic Number: 1 Mass Number: 1

• It is the most common isotope of hydrogen, making up about 99.98% of naturally occurring hydrogen.

• Deuterium (^{2}H or D)Atomic Number: 1 Mass Number: 2.

• Deuterium has 1 proton and 1 neutron in its nucleus. It makes up about 0.02% of naturally occurring hydrogen.

• Tritium (^{3}H or T) Atomic Number: 1 Mass Number: 3

• Tritium has 1 proton and 2 neutrons in its nucleus.

• Tritium is much rarer than the other two isotopes and occurs naturally in trace amounts (about 1 part in 1 trillion of hydrogen).

Q67. Answer: (d) 25

Given:

The ratio of length to breadth of the rectangular field = 6 : 5

Perimeter of the field = 110 m

Formula Used:

Perimeter of a rectangle = 2 × (Length + Breadth)

Calculation:

Let the length be 6x and the breadth be 5x.

Perimeter = 2 × (Length + Breadth)

=> 110 = 2 × (6x + 5x)

=> 110 = 2 × 11x

=> 110 = 22x

=> x = 110 / 22

=> x = 5

Breadth = 5x = 5 × 5 = 25 m

The breadth of the rectangular field is 25 m.

Q68. Answer: (a) 10 days

Given:

Kamal can complete a work in 14 days.

Vimal is 40% more efficient than Kamal.

Formula Used:

Efficiency prop. to 1/Time

If Efficiency_(Vimal) = 1.4 × Efficiency_(Kamal), then Time_(Vimal) = Time_(Kamal) / 1.4

Calculation:

Time taken by Kamal = 14 days

Vimal's efficiency = 1.4 × Kamal's efficiency

Time taken by Vimal = 14 / 1.4

=> Time taken by Vimal = 14 / 1.4

=> Time taken by Vimal = 10 days

The number of days Vimal will take to complete the same piece of work is 10 days.

Q69. Answer: (a) Vishakhapatnam

The correct answer is Vishakhapatnam.

Key Points

• Visakhapatnam is located on the southeast coast of India in the state of Andhra Pradesh, along the Bay of Bengal.

• It is the largest city in Andhra Pradesh and serves as the administrative headquarters of the Visakhapatnam district.

• PMAY was launched on June 25, 2015, aims to provide affordable housing to the urban poor and ensure "Housing for All" by 2022.

• PMAY (Urban): Focuses on providing housing in urban areas, PMAY (Gramin): Targets rural housing.

Additional Information

SCHEME/POLICY	LAUNCHED IN YEAR
Pradhan Mantri Jan Dhan Yojana(PMJDY)	2014
Make in India Scheme	2014
Swachh Bharat Mission	2014
Pradhan Mantri Awaas Yojana	2015
Pradhan Mantri Ujjwala Yojana	2016
Pradhan Mantri Fasal Bima Yojana(PMFBY)	2016
Pradhan Mantri Garib kalyan Yojana(PMGKY)	2020
Jal Jeevan Mission	2019
Atal Pension Yojana(APY)	2015

Q70. Answer: (c) Kolkata

The correct answer is Kolkata.

Key Points

• The headquarters of the Zoological Survey of India (ZSI) is located in Kolkata, West Bengal.

• The Zoological Survey of India (ZSI) was established in 1916.

• Motto: The motto of ZSI is "Knowledge of Animals for the Use of Mankind."

• It operates under the Ministry of Environment, Forest and Climate Change, Government of India.

Additional Information

Organization	HQ	Date
Wildlife Institute of India (WII)	Dehradun, Uttarakhand	1982
Indian Council of Agricultural Research (ICAR)	New Delhi	1929
Council of Scientific and Industrial Research (CSIR)	New Delhi	1942
Indian Space Research Organisation (ISRO)	Bengaluru, Karnataka	1969
Bharat Heavy Electricals Limited (BHEL)	New Delhi	1964
Indian Oil Corporation Limited (IOCL)	New Delhi	1959
Reserve Bank of India (RBI)	Mumbai, Maharashtra	1935
Food Corporation of India (FCI)	New Delhi	1965

Q71. Answer: (b) Primary waves

The correct answer is Primary waves.

Key Points

• P-waves travel the fastest through the Earth's interior, with speeds ranging from 5 to 8 km/s in the Earth's crust and even faster in the mantle and core.

• P-waves are compressional waves or longitudinal waves, meaning they move through the Earth by compressing and expanding the material in the direction the wave is traveling.

• P-waves can travel through solids, liquids, and gases, which allows them to be the first waves detected by seismographs during an earthquake.

• Due to their high speed, P-waves are the first seismic waves to be recorded at any seismic station after an earthquake, hence the name primary waves.

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Additional Information

• Secondary Waves (S-Waves) are Slower than P-waves (approximately 60% the speed of P-waves), traveling around 3-4 km/s in the Earth's crust.

• S-waves can only travel through solids (they cannot travel through liquids or gases, which is why they do not propagate through Earth's outer core).

• Oceanic waves caused by the gravitational pull of the moon and the sun on Earth’s oceans are called Tidal waves.

• Tidal waves are not related to seismic activity or earthquakes. Instead, they are caused by the cyclic rising and falling of sea levels due to the gravitational forces exerted by the moon and the sun.

• Seismic waves travel along the surface of the Earth, rather than through the interior.

• Surface waves are slower than both P-waves and S-waves, but they tend to be the most destructive.

Q72. Answer: (a) 61.28 m²

Given:

Length of the cistern = 8 m

Width of the cistern = 4 m

Depth of the water = 1 m 22 cm = 1.22 m

Formula Used:

Total area of the wet surface = Area of the base + Area of the four walls

Calculation:

Area of the base = Length × Width

=> Area of the base = 8 × 4 = 32 m²

Area of the two longer walls = 2 × (Length × Depth)

=> Area of the two longer walls = 2 × (8 × 1.22)

=> Area of the two longer walls = 2 × 9.76 = 19.52 m²

Area of the two shorter walls = 2 × (Width × Depth)

=> Area of the two shorter walls = 2 × (4 × 1.22)

=> Area of the two shorter walls = 2 × 4.88 = 9.76 m²

Total area of the wet surface = Area of the base + Area of the two longer walls + Area of the two shorter walls

=> Total area of the wet surface = 32 + 19.52 + 9.76 = 61.28 m²

The total area of the wet surface is 61.28 m².

Q73. Answer: (a) Chandragupta Maurya

The correct answer is Chandragupta Maurya.

Key Points

• Chandragupta Maurya (circa 321–297 BCE) was the founder of the Maurya Empire.

• Chandragupta is believed to have been born in either Pataliputra (modern-day Patna, Bihar) or Pipliya, Madhya Pradesh, around 340 BCE.

• Chandragupta, with the assistance of Chanakya, overthrew the Nanda dynasty in Magadha.

• Toward the end of his life, Chandragupta is believed to have embraced Jainism.

Additional Information

• Samduragupta was given the title of “Napoleon of India” by modern historian V.A. Smith due to his numerous conquests.

• He was the son of Chandragupta I and succeeded him as the ruler of the Gupta Empire.

• Chandragupta II, also known as Vikramaditya, was the son of Samudragupta and one of the greatest emperors of the Gupta dynasty.

• His reign is often considered the height of the Gupta Empire and the Golden Age of India.

• Prabhavati Gupta was the daughter of Chandragupta II and was married to Rudrasena II, a ruler of the Vakataka dynasty.

Q74. Answer: (d) 2 : 3

Given:

Point (4, 5) divides the line joining two points (2, 3) and (7, 8). We need to find the ratio in which the point divides the line segment.

Formula used:

If point (x, y) divides the line joining points (x1, y1) and (x2, y2) in the ratio m : n, then the coordinates of the dividing point are given by:

x = (m × x2 + n × x1)/(m + n) and y = (m × y2 + n × y1)/(m + n)

Calculations:

Let the ratio in which point (4, 5) divides the line be m : n.

From the formula for x:

=> 4 = (m × 7 + n × 2)/(m + n)

=> 4(m + n) = 7m + 2n

=> 4m + 4n = 7m + 2n

=> 3m = 2n

=> m/n = 2/3

Thus, the ratio is 2:3.

Therefore The point (4, 5) divides the line in the ratio 2:3.

Q75. Answer: (a) intranet

Explanation:

Intranet:

• An intranet is a private network used within an organization to provide secure communication and connectivity to its staff.

• It operates using internet protocols (TCP/IP) but is restricted to authorized users.

• It allows employees to access internal documents, emails, collaboration tools, and company resources.

Why Other Options Are Incorrect?

Extranet:

• An extranet extends the functionality of an intranet by allowing access to external users, such as vendors, partners, or customers.

• Since the question specifies "staff," an extranet is not the correct answer.

Telnet:

• Telnet is a remote login protocol used to access another computer over a network.

• It is not used for internal communication within an organization.

Internet:

• The internet is a public network that connects computers worldwide.

• It does not restrict access to an organization's staff, making it an incorrect choice.

Q76. Answer: (b) Matthew Selt

The correct answer is Matthew Selt.

Key Points

• Matthew Selt claimed his first-ever ranking title at the 2019 Indian Open. He defeated Lyu Haotian 5-3 in the final held in Kochi, Kerala.

• He also made it to the quarterfinals of the 2021 Turkish Masters and several other ranking events.

• Selt is known for his solid, methodical style of play and his ability to perform well under pressure in ranking events.

• He also made it to the quarterfinals of the 2021 Turkish Masters and several other ranking events.

Additional Information

• Anthony Hamilton's Nickname: "The Sheriff of Pottingham," because he hails from Nottingham.

• Anthony Hamilton won his first-ever ranking title at the 2017 German Masters, a well-known ranking event.

• Lyu Haotian reached the final of the Indian Open 2019 but was defeated by Matthew Selt 5–3.

• Lyu became a professional player at just 14 years of age, showing significant potential in the sport.

• John Higgins is a Four-time World Snooker Champion: Higgins has won the World Snooker Championship in 1998, 2007, 2009, and 2011.

• He has won over 30 ranking titles, placing him third on the all-time list behind Ronnie O'Sullivan and Stephen Hendry.

Q77. Answer: (b) 200

Given:

Future amount (A) = Rs. 230

Time (T) = 3 years

Rate of interest (R) = 5%

Formula Used:

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

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Future amount (A) = Principal (P) + Simple Interest (SI)
Calculation:
Let the principal amount be P.
Simple Interest (SI) = P × 5 × 3 / 100
SI = 15P / 100
SI = 0.15P
Future amount (A) = Principal (P) + Simple Interest (SI)
230 = P + 0.15P
=> 230 = 1.15P
=> P = 230 / 1.15
=> P = 200
The principal amount is Rs. 200.

Q78. Answer: (c) Milk Dairy

The logic followed here is:
Milk Cake, Milkshake, and Chocolate Milk are all edible items or beverages made with milk as an ingredient.
Whereas,
Milk Dairy refers to a place where milk is processed or produced rather than an edible item or drink.
Hence, the correct answer is "Milk Dairy".

Q79. Answer: (d) Rs. 3,18,750

Given:
Anand purchased a car for Rs. 3,75,000 and sold it at a loss of 15%.
Formula Used:
Selling Price (SP) = Cost Price (CP) - Loss
Loss = (Loss Percentage × Cost Price) / 100
Calculation:
Cost Price (CP) = Rs. 3,75,000
Loss Percentage = 15%
Loss = (15 × 3,75,000) / 100
=> Loss = 56,250
Selling Price (SP) = 3,75,000 - 56,250
=> Selling Price (SP) = 3,18,750
The cost at which he sold the car is Rs. 3,18,750.

Q80. Answer: (b) 21 min

Given:
Speed of the bus excluding stoppages = 80 km/h
Speed of the bus including stoppages = 52 km/h
We need to find how many minutes the bus stops per hour.
Formula used:
Time stopped per hour = (Time difference)/(Total time in hour) × 60 (to convert hours to minutes)
Distance traveled per hour (excluding stoppages) = 80 km
Distance traveled per hour (including stoppages) = 52 km
Calculations:
Step 1: Calculate the distance not traveled due to stoppages.
=> Distance not traveled = 80 km - 52 km = 28 km
Step 2: Time taken to cover 28 km at the speed of 80 km/h:
=> Time stopped = 2880 hours
=> Time stopped = 0.35 hours
Step 3: Convert time stopped to minutes.
=> Time stopped in minutes = 0.35 × 60 = 21 minutes
Therefore The bus stops for 21 minutes per hour.

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Q81. Answer: (c) Rs. 3938

Given:

Principal amount (P) = Rs. 25,000

Rate of interest for the first year (R1) = 4% = 0.04

Rate of interest for the second year (R2) = 5% = 0.05

Rate of interest for the third year (R3) = 6% = 0.06

Formula Used:

Amount after n^(th) year = P × (1 + R_n)

Calculation:

Amount after the first year:

=> A1 = 25000 × (1 + 0.04)

=> A1 = 25000 × 1.04

=> A1 = 26000

Amount after the second year:

=> A2 = 26000 × (1 + 0.05)

=> A2 = 26000 × 1.05

=> A2 = 27300

Amount after the third year:

=> A3 = 27300 × (1 + 0.06)

=> A3 = 27300 × 1.06

=> A3 = 28938

Interest earned = A3 - P

=> Interest earned = 28938 - 25000

=> Interest earned = 3938

The interest on the amount of Rs. 25,000 compounded annually at the rate of 4%, 5% and 6% per annum for the first, second and third year respectively is Rs. 3938.

Q82. Answer: (b) October 2014

The correct answer is October 2014

Key Points

• The Air Quality Index (AQI) is a crucial initiative launched by the Ministry of Environment, Forest and Climate Change in India as part of its broader environmental efforts, including the Clean India Mission (Swachh Bharat Abhiyan).

• Clean India Mission: Launched on October 2, 2014, the Clean India Mission aimed to improve sanitation and cleanliness across India, addressing issues related to solid waste management, open defecation, and pollution.

• It is one of the flagship programs of the Government of India, focusing on both urban and rural areas.

• The AQI was introduced in September 2015.

• The primary goal of the AQI is to provide the public with an understandable way to gauge air quality levels in their environment.

• It translates complex air quality data into a format that is easy to interpret, helping people to understand the potential health effects associated with different levels of air pollution.

Additional Information

The AQI is based on the concentration levels of specific air pollutants, including:

1. Particulate Matter (PM10 and PM2.5): These are tiny particles suspended in the air that can penetrate the respiratory system and cause health problems.

2. Nitrogen Dioxide (NO2): A gas that contributes to respiratory issues and is a byproduct of vehicle emissions and industrial activities.

3. Sulfur Dioxide (SO2): Emitted from fossil fuel combustion and industrial processes, SO2 can cause respiratory problems and contribute to acid rain.

4. Carbon Monoxide (CO): A colorless, odourless gas that can be harmful when inhaled in large amounts, primarily from vehicle emissions.

5. Ozone (O3): Ground-level ozone is a harmful air pollutant formed by the reaction of sunlight with pollutants from vehicles, power plants, and other sources.

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Q83. Answer: (b) Only conclusion 2 follows.

According to the given information:

Conclusion:

1: Aarohi loves all adventurous sports. → Does not follow (The statements only mention that Aarohi is fond of river-rafting, which is an adventurous sport. However, it does not imply that she loves all adventurous sports. She might enjoy river-rafting specifically without necessarily liking every adventurous activity.)

2: Aarohi is an adventurous person. → Follows (Since Aarohi is fond of river-rafting, which is described as an adventurous sport, it suggests that she has an interest in adventurous activities, making it reasonable to conclude that she may be an adventurous person.)

Hence, the correct answer is "Only conclusion 2 follows."

Q84. Answer: (b) 2p

Given:

$\sin\theta + \cos\theta = p$ and $\sec\theta + \csc\theta = q$

Formula used:

We know the following identities:

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

$\sec\theta = 1/(\cos\theta)$ and $\csc\theta = 1/(\sin\theta)$

Calculations:

Step 1: Square both sides of $\sin\theta + \cos\theta = p$.

$\Rightarrow \sin^2\theta + 2\sin\theta\cos\theta + \cos^2\theta = p^2$

Since $\sin^2\theta + \cos^2\theta = 1$, we have:

$\Rightarrow 1 + 2\sin\theta\cos\theta = p^2$

$\Rightarrow 2\sin\theta\cos\theta = p^2 - 1$

Step 2: Use the identity $\sin\theta\cos\theta = (\sin2\theta)/2$.

$\Rightarrow 2\sin\theta\cos\theta = \sin2\theta$

So, $p^2 - 1 = \sin2\theta$

Step 3: Use the expression for $\sec\theta + \csc\theta = q$.

$\Rightarrow q = 1/(\cos\theta) + 1/(\sin\theta) = (\sin\theta + \cos\theta)/(\sin\theta\cos\theta)$

$\Rightarrow q = p/(\sin\theta\cos\theta)$

$\Rightarrow$ Since $\sin\theta\cos\theta = (p^2 - 1)/2$, we have:

$\Rightarrow q = p/((p^2 - 1)/2)$

Step 4: Calculate $(q(p^2 - 1)$.

$\Rightarrow q(p^2 - 1) = 2p/(p^2 - 1) \times (p^2 - 1) = 2p$

Therefore The value of $q(p^2 - 1$ is $2p$.

Q85. Answer: (a) 2

Given:

The points of the triangle are (3, 5), (-7, 4), and (10, -6).

The centroid of the triangle is at the point (k, 1).

Formula Used:

The centroid (G) of a triangle with vertices (x1, y1), (x2, y2), and (x3, y3) is given by:

G((x1 + x2 + x3)/3, (y1 + y2 + y3)/3)

Calculation:

Given vertices: (3, 5), (-7, 4), (10, -6)

Using the formula for the centroid:

G((3 + (-7) + 10)/3, (5 + 4 + (-6))/3)

We know the y-coordinate of the centroid is 1:

1 = (5 + 4 - 6)/3

Let's calculate the x-coordinate of the centroid:

k = (3 - 7 + 10)/3

=> 6/3

k = 2

The value of k is 2.

Q86. Answer: (b) Boys of Commerce Group

Given:

High addiction is given a weightage of 3, Average addiction is given a weightage of 2, and Low addiction is given a weightage of 1.

We have the following groups:

Commerce Boys: High = 35, Average = 25, Low = 40

Commerce Girls: High = 22, Average = 34, Low = 27

Sciences Boys: High = 18, Average = 23, Low = 34

Social Sciences Girls: High = 26, Average = 30, Low = 30

Formula used:

Total weighted score for each group = High × 3 + Average × 2 + Low × 1

Calculations:

Commerce Boys:

Weighted score = 35 × 3 + 25 × 2 + 40 × 1

=> 105 + 50 + 40 = 195

Commerce Girls:

Weighted score = 22 × 3 + 34 × 2 + 27 × 1

=> 66 + 68 + 27 = 161

Sciences Boys:

Weighted score = 18 × 3 + 23 × 2 + 34 × 1

=> 54 + 46 + 34 = 134

Social Sciences Girls:

Weighted score = 26 × 3 + 30 × 2 + 30 × 1

=> 78 + 60 + 30 = 168

Therefore The group with the highest addiction level is Commerce Boys with a score of 195.

Q87. Answer: (b) 4.6%

Given:

Number of girls in the Sciences group in the Low category = 23

Total number of students surveyed = 500

Formula used:

Percentage = part/total × 100

Calculations:

=> Percentage = 23/500 × 100

=> Percentage = 4.6%

Therefore Girls students of the Sciences group in the Low category form 4.6% of the total student sample.

Q88. Answer: (d) 52%

Given:

Total number of students in the High Addiction group:

Commerce Boys = 35, Sciences Boys = 18, Social Sciences Boys = 22

Commerce Girls = 22, Sciences Girls = 20, Social Sciences Girls = 26

Total students in the High Addiction group = 35 + 18 + 22 + 22 + 20 + 26 = 143

Total boys in the High Addiction group = 35 + 18 + 22 = 75

Formula used:

Percentage of boys in High Addiction group = (Total boys in High Addiction group)/(Total students in High Addiction group) × 100

Calculations:

=> Percentage of boys = 75/143 × 100

=> Percentage = 52.45% ≈ 52%

Therefore Boys form approximately 52% of the High Addiction group.

Q89. Answer: (b) Neither 2005-06 nor 2006-07

Given:

The number of fresh registrations of scooters and motorcycles in the years:

2004-05: Scooters = 904, Motorcycles = 1654

2005-06: Scooters = 1316, Motorcycles = 2019

2006-07: Scooters = 2017, Motorcycles = 722

Formula used:

Percentage change = (New Value - Old Value)/(Old Value) × 100

Calculations:

For Scooters:

From 2004-05 to 2005-06:

=> (1316 - 904)/904 × 100 = 45.58%

From 2005-06 to 2006-07:

=> (2017 - 1316)/1316 × 100 = 53.25%

For Motorcycles:

From 2004-05 to 2005-06:

=> (2019 - 1654)/1654 × 100 = 22.07%

From 2005-06 to 2006-07:

=> (722 - 2019)/2019 × 100 = -64.24%

For Total Registrations (Scooters + Motorcycles):

2004-05 total = 904 + 1654 = 2558

2005-06 total = 1316 + 2019 = 3335

2006-07 total = 2017 + 722 = 2739

From 2004-05 to 2005-06:

=> (3335 - 2558)/2558 × 100 = 30.37%

From 2005-06 to 2006-07:

=> (2739 - 3335)/3335 × 100 = -17.87%

Since in year 2006 - 07 only scooters registration is more than 50% and not of motorcycles.

Therefore The year with more than 50% fluctuation for both scooters and motorcycles is Neither 2005-06 nor 2006-07.

Q90. Answer: (a) Classroom-Playground

The logic followed here is:

Option 1) Classroom-Playground → A classroom and a playground serve entirely different purposes; one is for learning, and the other is for physical activity.

Option 2) Teacher-Lecture → A teacher gives a lecture.

Option 2) Computer-Software → Software is used on a computer.

Option 4) Exam-Result → An exam leads to a result.

Thus, Classroom-Playground is the incorrect pair.

Hence, the correct answer is "Classroom-Playground".

Q91. Answer: (c) F

The logic followed here is:

Given series: Z, X, U, Q, L, ?

Hence, the correct answer is "F".

Q92. Answer: (b) 35

The logic followed here is:

Given series: 5, 7, 11, 17, 25, ?

Hence, the correct answer is "35".

Q93. Answer: (c) Bakery

The logic followed here is:

Milk and Dairy is that dairy is the place where milk is produced or processed.

Similarly,

Bakery is the place where bread is made or sold.

Hence, the correct answer is "Bakery".

Q94. Answer: (c) Harold Masters

According to the given information:

Identifying the Genre:

• The books of Ken Singleton, George Smith, and Harold Masters are poems (Statement 1).

• The books of Robin Hopkins, George Smith, and John Procter are novels (Statement 3).

• Since George Smith is mentioned as having both a poem (Statement 1) and a novel (Statement 3), we can infer he has two books, one poem and one novel.

Identifying the Format:

• The books of John Procter, Robin Hopkins, and Ken Singleton are Paperbacks (Statement 2).

Identifying the Cover Type:

• The books of Ken Singleton, Harold Masters, and John Procter have brown leather covers with black spines (Statement 4).

Conclusions from the Statements:

• Since Ken Singleton has a poem in Paperback with a brown leather cover (from Statements 1, 2, and 4), his book is eliminated from being "neither a novel nor in Paperback format."

• George Smith has both a poem and a novel, but no information about either format is provided in any statement, meaning he does not have a Paperback.

• Harold Masters has a poem with a brown leather cover but is not listed as having a Paperback in Statement 2.

Thus, Harold Masters book is neither a novel nor in Paperback format.

Hence, the correct answer is "Harold Masters".

Q95. Answer: (c) Biogas

The logic followed here is:

Coal, Petroleum, and Natural Gas are fossil fuels, which are non-renewable resources formed from the remains of ancient plants and animals over millions of years.

Whereas,

Biogas is a renewable resource produced from the decomposition of organic matter (like animal waste and plant material) and is not a fossil fuel.

Hence, the correct answer is "Biogas".

Q96. Answer: (b) Carbon Dioxide

The logic followed here is:

Kidney and Urine is that the kidney is an organ that removes waste by producing urine.

Similarly,

The lungs remove waste in the form of carbon dioxide during exhalation.

Hence, the correct answer is "Carbon Dioxide".

Q97. Answer: (d) B, D, C, G, A, E, F

Given: Seven persons A, B, C, D, E, F and G.

1) C sits third to the left of E.

2) E is the neighbour of A.

3) Only two persons sit between A and B.

4) Only three persons sit between C and F.

Here case 2 eliminated.

5) Only two persons sit between F and G.

Exact position of D is not given.

Analyze the options:

1) C, G, A, E, F, B, D - Possible (According to the given information this arrangement is correct because exact position of D is not given.)

2) D, C, G, A, E, F, B - Possible (According to the given information this arrangement is correct because exact position of D is not given.)

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3) D, B, C, G, A, E, F - Possible (According to the given information this arrangement is correct because exact position of D is not given.)

4) B, D, C, G, A, E, F - Not Possible (This statement "Only two persons sit between A and B" does not follow here)

Thus, this B, D, C, G, A, E, F seating arrangement cannot be possible (from left to right).

Hence, the correct answer is "B, D, C, G, A, E, F".

Q98. Answer: (c) 4.5 km

Given:

Distance between Sachin's home and school = 7 km

Distance between school and gym = 3 km

Distance between gym and market = 2 km

Distance between market and home = 2.5 km

Formula Used:

Shortest route distance = Distance between home and Market + Distance between Market and gym

Calculation:

There can be two paths,

1) Home to school than school to gym

2) Home to market than market to gym

In case 1, The total distance = 7 + 3 = 10km

In case 2, The total distance = 2.5 + 2 = 4.5km

So, Shortest route distance = 2.5 km (home to market) + 2 km (market to gym)

=> Shortest route distance = 4.5km

The correct answer is option 3.

Q99. Answer: (b) P is the mother of S.

Family Chart:

Decoding the Symbols:

Symbol	•	×	÷	•
Meaning	Daughter	Brother	Wife	Father

Given: 'P ÷ R - Q × S

It means: P is the wife of R, R is the father of Q and Q is the brother of S.

So, P is the mother of S.

Hence, the correct answer is "Mother".

Q100. Answer: (c) 40

The logic followed here is: In a row: 3rd number + 4th number - 2nd number = 1st number.

Row 1: 5 + 20 - 10 = 25 - 10 = 15

Row 2: 8 + 30 - 11 = 38 - 11 = 27

Row 3: 15 + ? - 10 = 45 → ? = 45 - 5 = 40

Hence, the correct answer is "40".

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