RRB NTPC CBT-I Official Paper (Held On: 28 Dec 2020 Shift 1) (Previous Year Paper)

RRB NTPC • 2020 • 100 questions • 90 minutes • Answer key and solutions

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

Q1. Which two banks were merged with Bank of Baroda with effect from 1^(st) April 2019?

(a) Syndicate Bank and UCO Bank
(b) Union Bank of India and Andhra Bank
(c) Vijaya Bank and Dena Bank
(d) Allahabad Bank and Canara Bank

Q2. Two buses start from opposite points towards each other on a main road, 185 km apart. The first bus runs for 35 km and takes a right turn and runs for 17 km. It then turns left and runs for another 42 km and takes the direction back to reach the main road, in the meantime, due to a minor breakdown, the other bus has run only 36 km along the main road. What would the distance between the two buses be at this point?

(a) 85 km
(b) 80 km
(c) 75 km
(d) 72 km

Q3. Pattachitra style of painting is one of the oldest and most popular art forms of which of the following states?

(a) Andhra Pradesh
(b) Rajasthan
(c) Odisha
(d) Bihar

Q4. Which of the following states is NOT a member of ‘Seven Sisters’ states of North-East India?

(a) Tripura
(b) Sikkim
(c) Meghalaya
(d) Mizoram

Q5. Where is the headquarters of the International Court of Justice located?

(a) The Hague
(b) Paris
(c) Washington D. C.
(d) New York

Q6. Four number-pairs have been given, out of which three are alike in some manner and one is different. Select the odd one.

(a) 12 - 96
(b) 13 - 104
(c) 15 - 120
(d) 16 - 118

Q7. Mukesh was facing the south. He walked 5 km straight and from there he turned at a 90° angle to his right and walked 5 km. Then he turned at a 45° angle to his left and walked 3 km. Where will he be from his actual position?

(a) North-west direction
(b) South-west direction
(c) South direction
(d) South-east direction

Q8. What is Sukanya Samriddhi Yojana?

(a) A small deposit scheme for the girl child.
(b) A scheme to provide bicycles for girls studying in the 10^(th) class.
(c) A scheme to provide skills that give employability to women.
(d) A scheme to develop self-defence skills in girls.

Q9. Four words have been given, out of which three are alike in some manner and one is different. Select the odd one.

(a) Chalk
(b) Book
(c) Pen
(d) Marker

Q10. Select the letter cluster that can replace the question mark (?) in the following series.
BZA, DYC, FXE, HWG, ?

(a) JUH
(b) JVH
(c) KVI
(d) JVI

Q11. Who said it, “Swaraj is my birth right and I shall have it”?

(a) Bhagat Singh
(b) Bal Gangadhar Tilak
(c) Gopal Krishna Gokhale
(d) Chandra Sekhar Azad

Q12. Out of Harish’s monthly salary of Rs. 45000, 1/3 is spent on education and 2/6 is spent on food and other necessities. The rest of the salary goes towards his savings. The amount of savings is:

(a) Rs. 22500
(b) Rs. 12000
(c) Rs. 15000
(d) Rs. 11250

Q13. In which city was the Khelo India Youth Games, 2020 held?

(a) Guwahati
(b) Kolkata
(c) Chennai
(d) Banglore

Q14. What is ‘UBUNTU’?

(a) Malware
(b) Operating system
(c) External hard drive
(d) Web Browser

Q15. In which of the following continents is the Gobi desert located?

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

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(d) Africa

Q16. Which part of the computer is called its brain?

(a) CPU
(b) Monitor
(c) Hard Disc
(d) ROM

Q17. Shweta and Harish completed a project with an income of Rs. 28,000. In this project, Shweta worked for 20 days and Harish worked for 30 days. If their daily wages are in the ratio of 5 : 6, then Shweta's share is:

(a) Rs. 16000
(b) Rs. 12000
(c) Rs. 18000
(d) Rs. 10000

Q18. If $1/(\sin^2 65° + \cos^2 65°) + (\sin 15°)/(\cos 75°) + (\cos 65°)/(\sin 25°) = \sqrt{3}\tan\theta$, then the value of θ is:

(a) 45°
(b) 60°
(c) 90°
(d) 30°

Q19. Where is the Sabarimala temple located?

(a) Kerala
(b) Andhra Pradesh
(c) Odisha
(d) Maharashtra

Q20. Which of the following passes connects Srinagar and Leh?

(a) Nathu La
(b) Bara-lacha-La
(c) Jelep La
(d) Zoji La

Q21. In which state is the Kudanukulam Nuclear Power Station located?

(a) Tamil Nadu
(b) Rajasthan
(c) Karnataka
(d) Gujarat

Q22. A group of friends are sitting in an arrangement with one each at the corner of an octagon. All are facing the centre. Medha is sitting diagonally opposite Radha. Medha is on Seema's left. Raman is next to Seema and opposite Govind. Govind is on Chandra's right. Shanti is not on Medha's right but is opposite to Shashi. Who is opposite Chandra?

(a) Seema
(b) Radha
(c) Shanti
(d) Raman

Q23. Which of the following is in the list of Maharatna Central Public Sector Enterprises?

(a) Central Coalfields Limited
(b) Cochin Shipyard
(c) India Tourism Development Corporation
(d) Coal India Limited

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Q24. Which of the following units is used for measuring the amount of a substance?

(a) Tesla
(b) Joule
(c) Lux
(d) Mole

Q25. The unit digit in 4 × 38 × 764 × 1256 is:

(a) 5
(b) 4
(c) 6
(d) 8

Q26. The ratio of the number of ladies to gents in a club is 3 : 2. Recently, 300 ladies joined the club and the ratio became 5 : 2. The number of lady members now in the club is:

(a) 1200
(b) 900
(c) 600
(d) 750

Q27. Between which two cities does India's first semi high-speed train "Vande Bharat Express' run?

(a) Puri and Howrah Junction
(b) Ahmedabad and Mumbai Central
(c) New Delhi and Varanasi Junction
(d) Hazrat Nizamuddin and Jhansi Junction

Q28. The value of 6/5 of (1/3+2/4)-5/6 of (3/10+12/20)-1/6 is:

(a) 1/12
(b) 1/3
(c) 3/4
(d) 5/6

Q29. The ratio of two positive numbers is 3 : 7 and their LCM is 231. The smaller number is:

(a) 55
(b) 33
(c) 44
(d) 77

Q30. In which year was the Second battle of Panipat fought between Akbar and Hemu?

(a) 1556
(b) 1576
(c) 1536
(d) 1526

Q31. Who was the founder of the Prarthana Samaj?

(a) Swami Dayanand Saraswati
(b) Raja Ram Mohan Roy
(c) Atmaram Pandurang
(d) Swami Vivekananda

Q32. The cost price of an article is 75% of the marked price. If a discount of 15% is allowed, then the profit or loss percentage is:

(a) 12.44% loss
(b) 15% profit
(c) 15.55% loss
(d) 13.33% profit

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Q33. Who is the author of 'Rajatarangini'?

(a) Jayadeva
(b) Kalidasa
(c) Kalhana
(d) Chand Bardai

Q34. The simple interest on an amount of Rs. 13400 for 4 years is Rs. 2680. The rate of interest is:

(a) 8%
(b) 4%
(c) 5%
(d) 6%

Q35. Select the option that is related to the third term in the same way as the second term is related to the first term.
Lawyer : court :: beautician : ?

(a) house
(b) ship
(c) class
(d) parlour

Q36. Through which of the following mediums sound CANNOT travel?

(a) Vacuum
(b) Milk
(c) Air
(d) Steel

Q37. Which Indian state has the longest mainland coastline?

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

Q38. What is the maximum strength of the members of the Lok Sabha?

(a) 543
(b) 547
(c) 549
(d) 550

Q39. Which of the following diseases is caused by a virus?

(a) Cholera
(b) Typhoid
(c) Chicken Pox
(d) Tuberculosis

Q40. The adjacent angles of a rhombus are in the ratio of 3 : 6. The smallest angle of the rhombus is:

(a) 120°
(b) 40°
(c) 80°
(d) 60°

Q41. In order to qualify in an examination, one has to secure 50% of the overall marks. In the examination consisting of two papers, a student secured 40% in the first paper of 200 marks. Minimum what percentage of marks should be secured in the second paper of 150 marks in order to qualify in the examination?

(a) 64%
(b) 60%
(c) 68%

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(d) 65%

Q42. In the following question, select the related words from the given alternatives.

Writer : Pen :: Tailor : ?

(a) Scalpel
(b) Axe
(c) Needle
(d) Saw

Q43. Select the number from among the given options that can replace the question mark (?) in the following table.

5	4	3
6	5	4
7	6	5
384	245	?

(a) 269
(b) 249
(c) 144
(d) 244

Q44. The term 'Sericulture' is related to which of the following?

(a) Silk farming
(b) Fish farming
(c) Bird farming
(d) Bee farming

Q45. Name the theme declared by United Nations for World Environment Day, 2020.

(a) Beat Plastic Pollution
(b) Biodiversity
(c) Connecting People to Nature
(d) Water pollution

Q46. Which of the following is a multi-barrel rocket system developed by DRDO?

(a) Dhanush
(b) Trishul
(c) Pinaka
(d) Prithvi

Q47. Which of the following monuments is NOT located in Delhi?

(a) Humayun's Tomb
(b) India gate
(c) Buland Darwaza
(d) Alai Darwaza

Q48. From among the given options, select the word which CANNOT be formed using the letters of the given word.

LAUGHTER

(a) GRUNT
(b) GATE
(c) HATE
(d) RATE

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Q49. Mahatma Gandhi started the famous 'Salt March' from Sabarmati to Dandi. In which district of Gujarat is Dandi?

(a) Surat
(b) Navsari
(c) Porbandar
(d) Kutch

Q50. In the domain of computers and the internet, what is the full form of URL?

(a) Universal Resource Locator
(b) Uniform Resource Locator
(c) Unique Resource Locator
(d) Unique Revoked Locator

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

RAMO : SCPS :: VXMJ : ?

(a) WZPN
(b) WQPN
(c) WQZN
(d) WPZN

Q52. If $a^3 - b^3 = 125$, $a^2 - b^2 = 25$ and $a + b = 5$ then the value of $a^2 + ab + b^2$ is:

(a) 125
(b) 5
(c) 25
(d) 130

Q53. Who among the following was the youngest President of India?

(a) Shri Neelam Sanjiva Reddy
(b) Dr. Rajendra Prasad
(c) Dr. S.Radhakrishnan
(d) Dr. Zakir Hussain

Q54. The sum of two numbers is 60 and their HCF and LCM are 12 and 72 respectively. The sum of the reciprocal of the two numbers is:

(a) 5/12
(b) 1/5
(c) 5/72
(d) 5/6

Q55. The greatest number that will divide 155, 260, 315 and leave the remainders 5, 10 and 15 respectively is:

(a) 75
(b) 50
(c) 10
(d) 25

Q56. The value of $180 \div (2^3 + 3^2 + 1) + 37 - 20$ equal to:

(a) 27
(b) 20
(c) 25
(d) 23

Q57. The angles of a triangle are $2x°$, $(3x - 8°)$ and $(5x - 12°)$. The greatest angle of the triangle is:

(a) 40°
(b) 112°
(c) 118°

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(d) 88°

Q58. The simple interest on a sum of amount for 2 years at 10% per annum is Rs. 500. The compound interest on the same sum at the same rate for the same time is:

(a) Rs. 525
(b) Rs. 510
(c) Rs. 515
(d) Rs. 520

Q59. The smallest 5 digit number that leaves a remainder of 6 when divided by 7 is:

(a) 10003
(b) 10007
(c) 10002
(d) 10009

Q60. Who was honoured with the 55^(th) Jnanpith Award for the year 2019?

(a) Chitra Mudgal
(b) Shobha Rao
(c) A Achuthan Namboothiri
(d) Krishna Sobti

Q61. In which year was The Environment (Protection) Act passed by the Parliament of India?

(a) 1990
(b) 1991
(c) 1986
(d) 1988

Q62. Which of the following countries is NOT a permanent member of United Nations Security Council?

(a) China
(b) United Kingdom
(c) Japan
(d) France

Q63. X and Y together can complete a piece of work in 12 days, Y and Z can do it 18 days and X and Z can complete the same work in 15 days. If X, Y and Z can together complete the work, approximately how many days will be required to complete the work?

(a) 12
(b) 18
(c) 14
(d) 10

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

Paediatrics : Children :: Neurology : ?

(a) heat
(b) eyes
(c) brain
(d) veins

Q65. In general, the most appropriate average value in measuring central tendency is:

(a) mode
(b) median
(c) range
(d) mean

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Q66. Which of the following shows a symbiotic relationship?

(a) Funaria
(b) Ulothrix
(c) Marsilea
(d) Lichen

Q67. Which of the following countries is NOT a member of BIMSTEC?

(a) Maldives
(b) India
(c) Bhutan
(d) Nepal

Q68. The value of √54×√125/√24×√45 is:

(a) 4
(b) 2.5
(c) 2√5
(d) 4√6

Q69. The value of 5 sin 14° sec 76° + 3 cot 15° cot 75° + 2 tan 45° is:

(a) 0
(b) 10
(c) 1
(d) 8

Q70. Which of the following two countries of South America are landlocked?

(a) Chile and Ecuador
(b) Brazil and Venezuela
(c) Guyana and Suriname
(d) Paraguay and Bolivia

Q71. A class of 50 girls and 70 boys sponsored a musical programme. If 40% of the girls and 50% of the boys attended. Answer approximately what percentage of the class attended the programme?

(a) 42%
(b) 44%
(c) 46%
(d) 48%

Q72. If all the special characters are dropped from the below arrangement, which of the following will be the 10th to the right of X?

3 X ! I B O # F 4 5 * 1 K 2 $ 8 R 8 % Z

(a) 8
(b) R
(c) S
(d) 2

Q73. Which Sikh guru established the Khalsa Panth?

(a) Shri Guru Nanak ji
(b) Shri Guru Har Gobind ji
(c) Shri Guru Tegh Bahadur ji
(d) Shri Guru Gobind Singh ji

Q74. A cylinder has a height of 14 cm and the curved surface area is 528 cm^2. The volume of the cylinder is:

(a) 1244 cm^3
(b) 792 cm^3
(c) 1584 cm^3

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(d) 2538 cm^3

Q75. A rope is divided in to three different parts. The first part is 1/5 of the whole length and second part of the rope is 3/2 of the first part. Third part is what fraction of the rope?

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

Q76. The value of 52/3 + 0.73 - 3.123 is equal to:

(a) 2.55
(b) 3.27
(c) 3.12
(d) 5.73

Q77. A train leaves station A towards station B at the speed of 50 km/hr. After half an hour, another train leaves station B towards station A at 150 km/hr. The distance between the stations is 725 km. The distance of the point from station A where the two trains are to meet is:

(a) 150 km
(b) 168 km
(c) 200 km
(d) 250 km

Q78. If the mass of a person is 60 kg on the surface of earth then the same person's mass on the surface of the moon will be:

(a) 360 kg
(b) 60 kg
(c) 10 kg
(d) 0 kg

Q79. If x/2+2/y=1 and y/2+2/z=1, then the value of z/2+2/x is:

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

Q80. Where is the Central Potato Research Institute of India located?

(a) Ranchi
(b) Lucknow
(c) Shimla
(d) Delhi

Q81. In which year did ISRO launch the Mars Orbiter Mission?

(a) 2012
(b) 2015
(c) 2014
(d) 2013

Q82. What is to be added to 12% of 2400, so that the sum will be equal to 18% of 5400?

(a) 288
(b) 952
(c) 684
(d) 972

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Q83. In a rectangle, the length is twice the breadth and the perimeter of the rectangle is 48 cm. The area of the rectangle is:

(a) 288 cm²
(b) 128 cm²
(c) 512 cm²
(d) 144 cm²

Q84. Select the combination of letters that when sequentially placed in the blanks will create a repetitive pattern

c _ b b a _ c a b _ a c _ a b _ a c

(a) a; c; b; c; b
(b) a; b; c; b; c
(c) b; a; b; c; c
(d) b; c; a; c; b

Q85. If sin θ =3/5 and cos θ =4/5, then the value of (1+tan θ)/(1-cot θ) is:

(a) 11/5
(b) 2/5
(c) (-21)/4
(d) (-8)/5

Q86. Select the option that is related to the third number in the same way as the second number is related to the first number.

21 : 11 :: 31 : ?

(a) 16
(b) 15
(c) 17
(d) 18

Q87. Select the number from among the given options that can replace the question mark (?) in the following table.

28	**63**	**94**
8	18	?
6	9	13

(a) 69
(b) 76
(c) 75
(d) 48

Q88. P is the brother of Q and R. S is R’s mother. T is P’s father. Which of the following statements CANNOT be definitely true?

(a) T is S's husband
(b) S is P's mother
(c) T is Q's husband
(d) T is Q's father

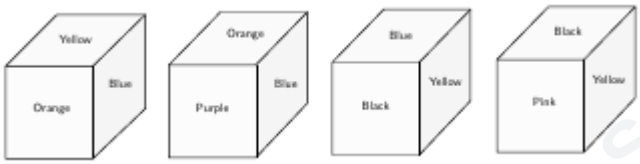
Q89. From among the given options, select the word which CANNOT be formed using the letters of the given word.

DAUGHTER

(a) HURT
(b) GET
(c) TOUGH
(d) DATE

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Q90. Four different positions of a cube are shown in the figure. Which of the following colours is on the face opposite to the face that has black written on it?



(a) Purple
(b) Pink
(c) Blue
(d) Orange

Q91. Five students are sitting in a row, Sunil is neither a neighbour of Aastha nor Shyam, Aastha is a neighbour of Shyam and she is on the left end of the row. Sunil is a neighbour of Manjeet, Manjeet is exactly in the middle of the row, and is not a neighbour of Amita. Who are the neighbours of Sunil?

(a) Manjeet and Amita
(b) Shyam and Amita
(c) Shyam and Manjeet
(d) Aastha and Manjeet

Q92. Select the number from among the given options that can replace the question mark (?) in the following series.

69, 55, 26, 13, ?

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

Q93. Five girls Beena, Leena, Meena, Reena and Teena are playing game. They are sitting in a row facing towards the north. Meena is sitting at the west end and Teena is sitting at the east end. Leena and Reena are sitting together next to each other. Beena is sitting to the left of Leena and to the right of Meena. Who is sitting second from the east end?

(a) Leena
(b) Reena
(c) Teena
(d) Beena

Q94. Select the numbers that can replace the question marks (?) in the following series.

97, 86, 101, 89, 107, ?, ?

(a) 114; 169
(b) 94; 115
(c) 84; 125
(d) 121; 144

Q95. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

All Roses are Red.

Some Red are Colours.

All Colours are Paints.

Conclusions:

I. Some Red are Paints.

II. All Red are Roses.

(a) Neither conclusion I nor II follows.

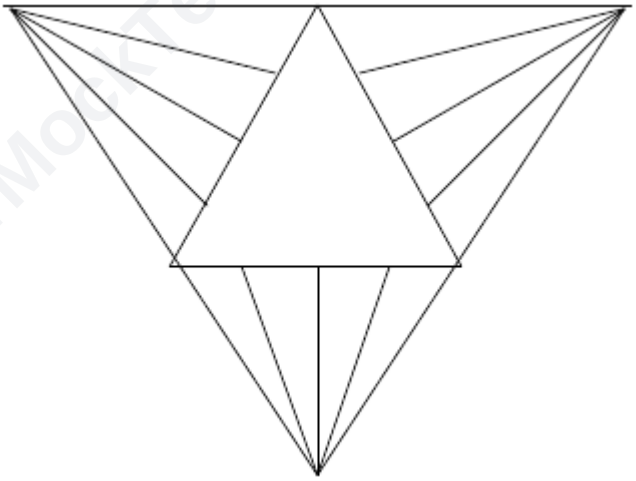
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(b) Only conclusion I follows.
(c) Both conclusion I and II follow.
(d) Only conclusion II follows.

Q96. Four letter clusters have been given, out of which three are alike in some manner and one is different. Select the odd one.
(a) IKJL
(b) EGFH
(c) MNPO
(d) ACBD

Q97. Four word-pairs have been given, out of which three are alike in some manner and one is different. Select the odd one.
(a) Paper : note
(b) Gift : gift wrap
(c) Head : cap
(d) Hand : glove

Q98. Find the number of triangles in the diagram given below:



(a) 30
(b) 31
(c) 32
(d) 29

Q99. Select the number that can replace the question mark (?) in the following series.
5, 10, 17, 26, ?
(a) 37
(b) 35
(c) 36
(d) 34

Q100. The positions of Deepti and Mohan in a row are 14^(th) from the left and 9^(th) from the right respectively. If they interchange their places, then Mohan will be 21^(st) from the right, find the position of Deepti from the left now and the total number of persons in the row.
(a) 24, 38
(b) 33, 27
(c) 26, 34
(d) 34, 26

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ANSWER KEY

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

SOLUTIONS

Q1. Answer: (c) Vijaya Bank and Dena Bank

The correct answer is Vijaya Bank and Dena Bank.

Key Points

• Bank of Baroda became the third largest bank after the amalgamation.

• State Bank of India (SBI) and ICICI Bank are the largest banks in India.

• The government of India proposed the merger of Dena Bank and Vijaya Bank with the Bank of Baroda on 17th September 2018.

• Branches of Vijaya Bank and Dena Bank will function as Bank of Baroda after the amalgamation.

• It was the first-ever three-way consolidation of banks in India.

• The Government of India nationalized the Bank of Baroda on 19 July 1969.

• The headquarters of the Bank of Baroda is located at Vadodara in Gujarat.

Additional Information

• Syndicate bank merged with Canara Bank In 2019.

• Allahabad Bank merged with Indian bank In 2019.

• Andhra Bank and Corporation Bank merged with Union Bank of India in 2019.

Q2. Answer: (d) 72 km

Given:

The distance between two buses = 185 km

Calculation:

The distance covered by first bus = 35 km + 42 km = 77 km

The distance covered by second bus = 36 km

Total distance covered by both buses = 77 km + 36 km = 113 km

Therefore The distance between the two buses = 185 km - 113 km = 72 km

Q3. Answer: (c) Odisha

The correct answer is Odisha.

Key Points

• Pattachitra style of painting is one of the oldest and most popular art forms of Odisha.

• Pattachitra style of painting is a traditional, cloth-based scroll painting.

• It is one of the ancient artworks of Odisha.

Additional Information

• Kalamkari is a type of hand-painted or block-printed cotton textile produced in Andhra Pradesh.

• Mandana paintings are wall and floor paintings of Rajasthan.

• Madhubani Painting is the folk painting of Bihar.

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• The famous Konark temple is located in Odisha.

Q4. Answer: (b) Sikkim

Sikkim is NOT correct,

• Among the options, only Sikkim is NOT a member of 'Seven Sisters' states of North-East India.

Key Points

• The family of 'Seven Sisters' states of North-East India consists of:

• Meghalaya.

• Assam.

• Manipur.

• Arunachal Pradesh.

• Mizoram.

• Nagaland.

• Tripura.

Important Points

• Northeast India originated in the 19th century during the British period.

• North-East India was a part of the Bengal Province between 1839 and 1873.

• The Northeastern region consist of only Assam, Manipur and Tripura when India was free from the British in 1947.

• The Northeastern States are often known as the Seven Sister states because they are interdependent on one another.

• Siliguri Corridor is the only way to reach the Seven Sister States.

• Sikkim is the second smallest among the Indian states.

• Sikkim is the largest producer of large cardamom in India.

Q5. Answer: (a) The Hague

The correct answer is The Hague.

Key Points

• The International Court of Justice (ICJ) is the principal judicial organ of the United Nations.

• The International Court of Justice was created with an aim to settle the disputes between states in accordance with international law and gives advisory opinions on international legal issues.

• It was established in June 1945

• It is the successor of the Permanent Court of International Justice (PCIJ).

• As of 2024 August, Nawaf Salam is the current President of the International Court of Justice.

Additional Information

• The headquarters of the United Nations Educational, Scientific and Cultural Organization(UNESCO) is located in Paris.

• The headquarters of the International Monetary Fund(IMF) is located in Washington, D.C.

• The headquarters of the United Nations is located in New York City.

Q6. Answer: (d) 16 - 118

In each of the given options, except for '16 - 118', the second number is the eighth multiple of the first number.

12 × 8 = 96

13 × 8 = 104

15 × 8 = 120

118 is not a multiple of 16.

Hence, "16 - 118" is different from the rest.

Q7. Answer: (b) South-west direction

First, the person went 5 km towards the south and then he turned right i.e. towards the west and then again went for 5 km and then finally turned 45° towards his left i.e. towards the south-west.

The path travelled by Mukesh is shown below:

Hence, Mukesh will be towards the "South-West" from his actual position.

Q8. Answer: (a) A small deposit scheme for the girl child.

The correct answer is A small deposit scheme for the girl child.

Key Points

• Sukanya Samriddhi Yojana is a savings scheme launched by the government of India.
• The scheme targeted the parents of girl children in India.
• The scheme was launched in 2015.
• It was launched by prime minister Narendra Modi.
• It was launched as a part of the Beti Bachao, Beti Padhao campaign.

Q9. Answer: (b) Book

Chalk - It is used to write on blackboards.
Book - It contains information of all kinds.
Pen - It is used to write on paper.
Marker - It is used to highlight things or is often used to write on whiteboards.
Thus, except for books, all are used to write.
Hence, "book" is different from the others.

Q10. Answer: (d) JVI

The given series: BZA, DYC, FXE, HWG, ?
Hence, "JVI" would be the next term of the series.

Q11. Answer: (b) Bal Gangadhar Tilak

The correct answer is Bal Gangadhar Tilak.
Key Points
• Bal Gangadhar Tilak was an Indian independence activist.
• He is popularly called "Lokamanya".
• He is also called "The father of the Indian unrest.".
• He founded the Home Rule League.
Additional Information
• "Inqilab Zindabad" is the slogan first raised by Bhagat Singh.
• "Dushman ki goliyon ka hum samna karenge" is the slogan first raised by Chandra Sekhar Azad.
• "Dilli Chalo" is the slogan first raised by Subhash Chandra Bose
• "Do or die" is the slogan first raised by Mahatma Gandhi.
• "Jai jawan Jai Kisan" is the slogan first raised by Lal Bahadur Shastri.

Q12. Answer: (c) Rs. 15000

Given:
Monthly Salary = Rs. 45000
Calculation:
Amount spent on education = Rs.45000 × 1/3 = Rs. 15000
Amouont spent on food and other necessities = Rs.45000 × 2/6 = Rs. 15000
Amount kept for savings = Rs. 45000 - Rs. 15000 - Rs.15000 = Rs. 15000
Therefore The required amount of savings = Rs. 15000

Q13. Answer: (a) Guwahati

The correct answer is Guwahati.
Key Points
• Khelo India Youth Games 2020 is the third edition of the Khelo India Youth Games.
• Khelo India Youth Games 2020 consists of 20 sports disciplines.
• Cycling and Lawn Bowls were the new additional games of this edition's event.
• Maharashtra topped in the final medal tally of the 3rd edition of the Khelo India Youth Games.
• The first edition of the Khelo India Youth Games in 2018 was held in Delhi.
• The second edition of the Khelo India Youth Games in 2019 was held in Pune, Maharashtra.
• The fourth edition of the Khelo India Youth Games in 2022 will be held in Panchkula, Haryana.

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Q14. Answer: (b) Operating system

The correct answer is Operating system.

Key Points

• UBUNTU is an example of an operating system.
• The operating system is a collection of programs that controls the overall operations of the computer.
• Operating systems are of two types namely, Open-source operating systems and Closed source operating systems.
• UBUNTU is free and open-source software.
• Operating systems works as an interface between a user and computer hardware components.
• Examples of operating systems are:
• Linux
• Unix
• DOS
• Windows
• Ubuntu
• Embedded operating system
• OpenBSD
• Mac OS

Additional Information

• Malware is a file or code that is designed to damage and destroy computers and computer systems.
• Viruses, worms, Trojan viruses, spyware are the common examples of malware.
• A web browser is an application used to access and view websites.
• Google Chrome, Mozilla Firefox, Apple Safari are the common examples of web browsers.

Q15. Answer: (c) Asia

The correct answer is Asia.

Key Points

• The Gobi desert is a large desert located in the Asian continent.
• The Gobi desert stretches across the majority of portions of both Mongolia and China.
• The Gobi desert is a cold desert.
• It is the fifth-largest desert in the world.
• The complete area of the Gobi desert is 500,000 square miles.

Important Points

• Important deserts located in Asia are:
• Thar Desert.
• Taklamakan Desert.
• The Cholistan Desert.
• Kyzylkum Desert.
• Karakum Desert.

Additional Information

• Important deserts located in Europe are:
• Tabernas Desert.
• Deliblato Sande.
• Oltenian Sahara Desert.
• Accona Desert.
• Important deserts located in North America are:
• Chihuahuan Desert.
• Mojave Desert.
• Sonoran Desert.
• Great Basin Desert.
• Important deserts located in Africa are:
• Sahara Desert,
• Namib Desert.

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• Kalahari Desert

Q16. Answer: (a) CPU

The correct answer is CPU.

Key Points

• CPU is the abbreviation of Central processing unit.
• CPU is known as the brain of the computer.
• CPU controls the overall functioning of the computer.
• All the data processing is done inside the CPU.
• The main three parts of the CPU are:
1. Arithmetic and Logic Unit.
2. Control Unit.
3. Memory Unit.
• A computer's CPU handles all instructions it receives from hardware and software running on the computer.
• The CPU was first invented and developed at Intel with the help of Ted Hoff and others in the early 1970s.
• The Control Unit is the nerve centre of the computer.

Q17. Answer: (d) Rs. 10000

Given:

Income earned = Rs .28000

Formula used:

Share of wages = No of days × Efficiency per day

Calculation:

The ratio of the share of Shweta and Harish

=> 20 days × 5 : 30 days × 6

=> 5 : 9

Shweta share's = 28000 × 5/(5 + 9)

=> Rs. 10000

Therefore Shweta's share is Rs. 10000.

Q18. Answer: (b) 60°

Formula used:

$\sin (90 - x) = \cos x$

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

Calculation:

$1/(\sin^2 65° + \cos^2 65°) + (\sin 15°)/(\cos 75°) + (\cos 65°)/(\sin 25°) = \sqrt{3}\tan\theta$

=> $1 + \sin (90 - 75)°/ \cos 75° + \cos (90 - 25)°/\sin 25° = \sqrt{3}\tan\theta$

=> $1 + \cos 75°/\cos 75° + \sin 25°/\sin 25° = \sqrt{3}\tan\theta$

=> $1 + 1 + 1 = \sqrt{3}\tan\theta$

=> $3 = \sqrt{3}\tan\theta$

=> $\tan\theta = 3/ \sqrt{3}$

=> $\tan\theta = \sqrt{3}$

=> $\tan\theta = \tan 60°$

Therefore $\theta = 60°$

Q19. Answer: (a) Kerala

The correct answer is Kerala.

Key Points

• Sabarimala temple is a famous temple in Kerala.
• It is dedicated to Lord Ayyappa.
• It is the ‘Sacred Abode of Lord Ayyappa’ and one of the most important Hindu pilgrim centre in India.
• The temple is open to people belonging to all religions.
• It is open for worship only during the days of Mandalapooja, Makaravilakku, Vishu and also during the first day of every

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Malayalam month.

• Pilgrims have to observe celibacy for 41 days before going to Sabarimala.

Important Points

• Famous pilgrimage sites in Kerala:

• Anantha Padmanabha Temple.

• Guruvayoor.

• Attukal Bhagavathi Temple.

• Thirunelly Temple.

• Ambalappuzha Sree Krishna Temple.

Additional Information

• Famous pilgrimage sites in Andhra Pradesh:

• Tirupati.

• Tirumala.

• Ahobilam.

• Antharvedi.

• Famous pilgrimage sites in Odisha:

• Jagannath Temple Puri.

• Konark Sun Temple.

• Parsurameswara Temple.

• Mukteshwar Temple.

• Famous pilgrimage sites in Maharashtra:

• Elephanta Caves.

• Trimbakeshwar Jyotirlinga.

• Shirdi.

• Ellora, Aurangabad.

• Shani Shingapur.

Q20. Answer: (d) Zoji La

The correct answer is Zoji La.

Key Points

• Zoji La is a mountain pass located in the Himalayas in Ladakh.

• Zoji La connects Srinagar and Leh.

• It connects the Kashmir Valley to its west with the Dras and Suru valleys to its northeast and the Indus valley further east.

• Zoji La pass is the lifeline that keeps the people of Ladakh in touch with the rest of the world.

• The elevation of Zoji La is 3,528m (11,575ft) above sea level.

• It is one of the most treacherous passes in the world.

• Zojila tunnel project was launched in 2018.

Additional Information

• Bara-Lacha-La Pass connects Lahaul district in Himachal Pradesh with Leh district in Ladakh.

• Jelep La Pass connects Sikkim with the autonomous region of Tibet, China.

• Nathu La Pass connects Sikkim with the autonomous region of Tibet, China.

• Rohtang Pass connects Kullu Valley with the Lahaul and Spiti Valleys of Himachal Pradesh.

• Shipki La Pass connects the Kinnaur district of Himachal Pradesh with the autonomous region of Tibet, China.

Q21. Answer: (a) Tamil Nadu

The correct answer is Tamil Nadu.

Key Points

• Kudanukulam Nuclear Power Station is located in Tamil Nadu.

• Kudanukulam Nuclear Power Station is the largest nuclear power plant in India.

• It is situated in the Tirunelveli district of Tamil Nadu.

• It was built in collaboration with Atomstroyexport, the Russian state company, and Nuclear Power Corporation of India Limited (NPCIL).

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• It has a capacity of 6,000 MW of electricity.
• The construction of the Kudanukulam Nuclear Power Station began on 31 March 2002.

Additional Information

• Madras Atomic Power Station located at Kalpakkam is another operational nuclear power plant in Tamil Nadu.
• Kakrapar Atomic Power Station is a nuclear power station in Gujarat.
• Kaiga Atomic Power Station is a nuclear power station in Karnataka.
• Rajasthan Atomic Power Station is a nuclear power station located at Rawatbhata in Rajasthan.
• Narora Atomic Power Station is a nuclear power station located in Uttar Pradesh.
• Tarapur Atomic Power Station is a nuclear power station located in Maharashtra.

Q22. Answer: (a) Seema

1) Medha is sitting diagonally opposite Radha.

We can randomly place Medha on any seat and then we can place Radha opposite her.

2) Medha is on Seema's left.

3) Raman is next to Seema and opposite Govind.

Raman must be to Seema's right as Medha is to her left.

4) Govind is on Chandra's right.

Implies, Chandra is sitting between Govind and Radha.

5) Shanti is not on Medha's right but is opposite to Shashi.

Implies, Shanti is to the immediate left of Medha, and Sashi is between Radha and Raman.

Hence, "Seema" is opposite Chandra.

Q23. Answer: (d) Coal India Limited

The correct answer is Coal India Limited.

Key Points

• Coal India Limited is a Maharatna central public sector enterprise in India.
• Coal India Limited came into being in November 1975.
• As of 1st April 2021, Coal India Limited is the single largest coal producer in the world and one of the largest corporate employers with manpower of 2,59,016.
• It is under the ownership of the Ministry of Coal, Government of India.
• The headquarters of Coal India Limited is in Kolkata, West Bengal.

Important Points

• 14 Maharatna central public sector enterprises in India.
• 1. Bharat Heavy Electricals Limited
• 2. Bharat Petroleum Corporation Limited
• 3. Coal India Limited
• 4. GAIL India Limited
• 5. Hindustan Petroleum Corporation Limited
• 6. Indian Oil Corporation Limited
• 7. NTPC Limited
• 8. Oil & Natural Gas Corporation Limited,
• 9. Power Finance Corporation
• 10. Power Grid Corporation of India Limited
• 11. Steel Authority of India Limited
• 12. Rural Electrification Corporation Limited
• 13. Oil India Ltd
• 14. Hindustan Aeronautics Limited

Additional Information

• The government has the 11th public sector enterprise accorded the 'Maharatna' status to state-owned Power Finance Corporation (PFC).
• Central Coalfields Limited is a subsidiary of Coal India Limited listed under Miniratna company.
• Cochin Shipyard Ltd is the largest shipbuilding and maintenance facility in India located in Kochi. Kerala.
• Cochin Shipyard Ltd is listed under Miniratna company.

• The India Tourism Development Corporation is a hospitality, retail and education company under the Ministry of Tourism.
• The India Tourism Development Corporation is listed under Miniratna company.

Q24. Answer: (d) Mole

The correct answer is Mole.

Key Points

• The amount of substance in a given sample of matter is the 'number of discrete atomic-scale particles in it' divided by the 'Avogadro constant N_A.
• A mole is used for measuring the amount of a substance.
• The amount of substance is the number of particles that constitute the substance.
• One mole (mol) contains exactly $6.02214076 \times 10^{23}$ elementary entities.

Additional Information

• Tesla is the unit of the magnetic B-field strength.
• Joule is the unit of energy.
• The lux is the SI unit of illuminance.

Q25. Answer: (d) 8

Shortcut Trick

To find the unit digit of a product, multiply only the unit digits of each number.

Unit digits are: 4, 8, 4, and 6.

Product of unit digits: $4 \times 8 \times 4 \times 6$

Step-wise: ($4 \times 8 = 32 \rightarrow 2$); ($2 \times 4 = 8$); ($8 \times 6 = 48 \rightarrow 8$).

The final unit digit is 8.

Therefore The correct answer is 8.

Alternate Method

Given: Expression = $4 \times 38 \times 764 \times 1256$

To calculate the unit digit, we focus only on the last digit of every term in the expression:

=> Unit digit of 4 = 4

=> Unit digit of 38 = 8

=> Unit digit of 764 = 4

=> Unit digit of 1256 = 6

=> Required unit digit = Unit digit of $(4 \times 8 \times 4 \times 6)$

=> Unit digit of (32×24)

=> Unit digit of $(2 \times 4) = 8$

=> Therefore, the unit digit of the final product is 8, which corresponds to Option 4.

Therefore The correct answer is 8.

Additional Information

Cyclicity of Unit Digits

The unit digit of numbers repeats in a specific cycle when raised to a power. For example, the cyclicity of 2, 3, 7, and 8 is 4, while the cyclicity of 4 and 9 is 2.

Unit Digit of 5 and 6

Any power of a number ending in 0, 1, 5, or 6 will always have a unit digit of 0, 1, 5, or 6 respectively (Cyclicity = 1).

Product with Even and 5

If a product contains at least one number ending in 5 and at least one even number, the unit digit of the entire product will always be 0.

Q26. Answer: (d) 750

Given:

The ratio of the number of ladies to gents in a club is 3 : 2

300 ladies joined the club and the ratio became 5 : 2.

Calculation:

Let the number of ladies and gents is 3x and 2x.

According to the question:

(3x + 300)/ 2x = 5/2

=> 3x + 300 = 5x

=> 2x = 300

=> x = 150

Therefore The number of ladies number now = 3x + 300 = 450 + 300 = 750

Alternate Method

Ladies	:	Gents	Total
3	:	2	5
+300	:		
5	:	2	7

(7 - 5) = 2 = 300

=> 5 = 300/2 × 5 = 750

Q27. Answer: (c) New Delhi and Varanasi Junction

The correct answer is New Delhi and Varanasi Junction.

Key Points

• The Vande Bharat Express is an Indian semi-high-speed under the Indian government's Make in India initiative.

• Vande Bharat Express is also known as 'Train 18'.

• India’s first semi high-speed train “Vande Bharat Express’ run between New Delhi and Varanasi Junction.

• The train was developed over a span of 18 months.

• The train was launched on 15 February 2019.

• The train flagged off for an inaugural run by Prime Minister of India Narendra Modi.

• It was designed and manufactured by Integral Coach Factory (ICF) Chennai.

• Indian Railway currently operates two Vande Bharat train services one from Delhi to Varanasi and the other from Delhi to Katra.

• Vande Bharat Express is the second fastest operating train in India after Gatimaan Express.

Q28. Answer: (a) 1/12

Follow BODMAS rule to solve this question, as per the order given above.

Calculation:

6/5 of (1/3+2/4)-5/6 of (3/10+12/20)-1/6

=> 6/5 × (1/3 + 1/2) - 5/6 × (3/10 + 6/10) - 1/6

=> 6/5 × 5/6 - 5/6 × 9/10 - 1/6

=> 1 - 3/4 - 1/6

=> (12 - 9 - 2)/12

=> 1/12

Therefore The required answer = 1/12

Q29. Answer: (b) 33

Given:

The ratio of two positive numbers is 3 : 7 and their LCM is 231.

Calculation:

Let the two positive numbers are 3y and 7y.

LCM (3y, 7y) = 21y

=> 21y = 231

=> y = 11

Therefore The smaller number 3y = 3 × 11 = 33

Q30. Answer: (a) 1556

The correct answer is 1556.

Key Points

• The second battle of Panipat took place in 1556.

• The second battle of Panipat was fought between the forces of Samrat Hem Chandra Vikramaditya(Hemu) and the Army of Akbar.
• Hemu was the Hindu king who has ruled North India from Delhi.
• The battle ended in a decisive Mughal victory under the leadership of Bairam Khan.
• The war ended the Mughal-Afghan contest for the throne of Delhi.
• Akbar assumed the reigns of the kingdom at the age of 18.

Additional Information

• First battle of Panipat took place in 1526.
• It was fought between the Mughal ruler Babur and the Lodi dynasty.
• The battle ended with the victory of the Babar and established the Mughal dynasty.
• Third Battle of Panipat took place in 1761.
• It was fought between the Maratha Empire and the invading Afghan army under Ahmad Shah Durrani.
• The battle ended with the victory of Ahmad Shah Durrani.

Q31. Answer: (c) Atmaram Pandurang

The correct answer is Atmaram Pandurang.

Key Points

• The Prarthana Samaj was founded in 1867.
• It was founded by Atmaram Pandurang.
• Prarthana Samaj played a very important role in the Maharashtra renaissance.
• It focused on religious and social reform in Maharashtra.
• The mouthpiece called 'Subodh-Patrika' was run by the Prarthana Samaj.
• Veeresalingam Pantulu was the Telugu reformer who encouraged the Prarthana Samaj in South India.

Additional Information

• Swami Dayanand Saraswati is the founder of Arya Samaj in 1875.
• Raja Ram Mohan Roy is the founder of Brahmo Samaj in 1828.
• Swami Vivekananda is the founder of the Ramakrishna Mission in 1897.

Q32. Answer: (d) 13.33% profit

Given:

Discount % = 15%

Formula used:

Selling price = Marked Price - Discount

Profit = Selling Price - Cost Price

Profit % = (Profit/Cost price)× 100

Calculation:

Let the marked price be = 100

So, the cost price = 100 × 75/100 = 75

Selling price = 100 - 100 × (15/100) = 85

Profit = 85 - 75 = 10

Profit percentage = 10/75 × 100

Therefore The profit percent is 13.33%

Confusion Points1. Discount is always calculated on the marked price.

2. The Profit or Loss percentage is always calculated on the Cost Price of an item.

Q33. Answer: (c) Kalhana

The correct answer is Kalhana.

Key Points

• Rajatarangini historical book written by Kalhana.
• It was written in the Sanskrit language.
• The word meaning of Rajatarangini is the River of Kings.
• Kalhana wrotes the Rajatarangini in the 12th century(1100-1150).

Additional Information

• Jayadeva is most known for his epic poem Gita Govinda.
• Chand Bardai was an Indian poet
• He was most known for his epic poem Prithviraj Raso.

Q34. Answer: (c) 5%

Given:
Simple Interest = Rs. 2680
Principal = Rs. 13400
Formula used:
Simple Interest = Principal × Time × rate/100
Calculation:
According to the question,
=> 2680 = 13400 × 4 × rate/100
=> rate = 2680/(268 × 2)
=> rate = 5%
Therefore The required rate of interest is 5%.

Q35. Answer: (d) parlour

A lawyer works or performs his duties in a court.
Similarly, a beautician works in a parlour.
Family members work in a house.
Sailors works in a ship.
Teachers work in a class.
Hence, "parlour" is the correct option.

Q36. Answer: (a) Vacuum

The correct answer is Vaccum.
Key Points
• Sound is a longitudinal wave that consists of compressions and rarefactions travelling through a medium.
• Sound cannot travel through Vacuum.
• As sound waves are longitudinal waves, the air particles vibrate to and fro in the direction of the propagation of sound.
• The study of sound is called Acoustics.
• Speed of sound in air = 343 m/s.
• Unit of the frequency of sound: Hertz(Hz).
• Unit of Intensity of sound: Decibels(dB).
• The sound frequency at which a human can hear ranges between 20Hz to 20kHz.

Q37. Answer: (a) Gujarat

The correct answer is Gujarat.
Key Points
• Gujarat has the longest mainland coastline among Indian states.
• The length of the coastline in India is 7516.6 km.
• Out of 7516.6 km, Mainland consists of 5422.6 km and Island Territories consists of 2094 km.
• Andhra Pradesh has the longest coastline in South India.
Additional Information
• Gujarat is a state on the western coast of India with a coastline of 1,600 km.
• Gandhinagar is the capital city of Gujarat.
• Kandla is the major seaport of Gujarat.
• The famous Indus Valley Civilisation, such as Lothal, Dholavira, and Gola Dhoro are located in Gujarat.
• Gir Forest National Park located in Gujarat is the only Asiatic lion
• Kandla in Gujarat is the first Special Economic Zone in India.
• Tithal Beach is India's first disabled-friendly beach situated in Gujarat.
• India has nine coastal states namely:

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• Gujarat.
• Maharashtra
• Goa.
• Karnataka
• Kerala
• Tamil Nadu
• Andhra Pradesh
• Odisha
• West Bengal

Q38. Answer: (d) 550

The correct answer is 550

Key Points

• Lok Sabha is the lower house of India's bicameral Parliament.
• It is also called the 'House of the People'.
• The maximum strength of the Lok Sabha is fixed at 550.

Important Points

• Lok Sabha is constituted under article 81 of the constitution.
• Fifth Lok Sabha from 1971 to 1977 is the longest Lok Sabha in India.
• Twelfth Lok Sabha from 1998 to 1999 is the shortest Lok Sabha in India.
• G. V Mavlankar is considered the Father of Lok Sabha.

Q39. Answer: (c) Chicken Pox

The correct answer is Chicken Pox.

Key Points

• Chicken Pox is a virus causing disease.
• Chicken Pox is caused by the varicella-zoster virus.
• Varicella vaccine is a vaccine that protects against chickenpox.

Important Points

• A virus is an infectious agent that replicates only inside the living cells of an organism.
• Viruses consist of genetic material, DNA or RNA, with a coat of protein around them.
• The virus was discovered by Dmitri Ivanovsky.
• The study of viruses is known as virology.
• Important disease caused by the virus are:
• Smallpox.
• Chickenpox.
• COVID-19.
• Influenza.
• SARS.
• Human papillomavirus.
• Polio.
• Rabies.
• Mumps.
• Dengue fever.
• Measles.
• Common cold.

Additional Information

• Important disease caused by bacteria are:
• Cholera.
• Leprosy.
• Tuberculosis.
• Typhoid

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- Plague.
- Syphilis.
- Anthrax.
- Diphtheria.
- Pneumonia.
- Pertussis.

Q40. Answer: (d) 60°

Given:

The adjacent angles of a rhombus are in the ratio of 3 : 6.

Property:

Adjacent angles of a rhombus are supplementary.

The opposite angles of a rhombus are equal.

Calculation:

Let the adjacent angles are 3x and 6x.

3x + 6x = 180°

=> 9x = 180°

=> 3x = 60°

Therefore The smallest angle of the rhombus = 60°

Q41. Answer: (a) 64%

Given:

Overall qualifying marks percentage = 50%

Total marks = 200 + 150 = 350

Calculation:

Total marks to be needed to qualify the exam 50% of the overall marks.

=> 50% × (200 + 150)

=> (1/2) × 350 = 175

Marks Secured in first paper = 40% of 200

=> 200 × 40/100 = 80

Remaining marks to be secured = 175 - 80 = 95

According to the question,

=> (95/150)× 100

=> 63.33% or 64%

Therefore The required percentage of marks is 64%

Q42. Answer: (c) Needle

A writer uses a pen to write his stories.

Similarly, a tailor uses needles to stitch the clothes.

A scalpel is used by doctors during surgeries.

An axe and a saw are used by a carpenters.

Hence, "needle" is the correct option.

Q43. Answer: (c) 144

In column 1:

5 + 6 x 6 + 7x 7 x 7 = 5 + 36 + 343 = 384

In column 2:

4 + 5 x 5 + 6 x 6 x 6 = 4 + 25 + 216 = 245

Similarly,

In column 3:

3 + 4 x 4 + 5 x 5 x 5 = 3 + 16 + 125 = 144

Hence, 144 is the correct answer.

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Q44. Answer: (a) Silk farming

The correct answer is Silk farming.

Key Points

• Sericulture is the production of raw silk by means of raising caterpillars (larvae).
• Bombyx mori is the most widely used and intensively studied silkworm for Silk farming.
• China and India are the leading producers of silk with more than 60% of the world's annual production.
• Silk is a fiber made up of proteins namely sericin and fibroin.

Additional Information

• Pisciculture is the scientific rearing and management of all fish farming.
• Apiculture is the scientific rearing of honey bees for the commercial production of honey and other bee products.
• Horticulture is related to fruit production
• Sylviculture is related to the cultivation of fodder crops
• Olericulture is related to the cultivation of vegetables.

Q45. Answer: (b) Biodiversity

The correct answer is Biodiversity.

Key Points

• World environment day is a global platform for raising awareness and taking action on urgent issues from marine pollution and global warming to sustainable consumption and wildlife crime.
• Since 1974, World Environment Day has been celebrated every year on 5^(th) June.
• "Biodiversity" is the theme declared by United Nations for World Environment Day, 2020.
• The 2020 World Environment Day theme focused on biodiversity – a concern both urgent and existential.
• The 2020 World Environment day was hosted by Colombia.
• More than 143 countries annually participating in the world environment day event.

Additional Information

• "Only one Earth during Expo '74" was the theme of first-world environment day in 1974.
• The first-world environment day was hosted by Spokane, United States.
• "Ecosystem restoration" is the theme declared by United Nations for World Environment Day, 2021.
• The 2021 World Environment day will be hosted by Pakistan.
• "Beat Plastic Pollution" was the theme declared by United Nations for World Environment Day, 2018.
• The 2018 World Environment day was hosted by India.
• "Connecting People to Nature" was the theme declared by United Nations for World Environment Day, 2017.
• The 2017 World Environment day was hosted by Canada.
• "Beat Air Pollution" was the theme declared by United Nations for World Environment Day, 2019.
• The 2019 World Environment day was hosted by China.

Q46. Answer: (c) Pinaka

The correct answer is Pinaka.

Key Points

• Pinaka is a multi-barrel rocket system developed by the Defence Research and Development Organisation (DRDO).
• Pinaka was developed for the Indian Army.
• It was manufactured by Economic Explosives Limited.
• It can destroy targets up to 45km.
• The newly developed Pinaka rocket will replace the existing Pinaka Mk-I rockets.
• The 15-foot long rocket weighs around 280 kg and can carry warheads up to 100 kg.
• Samir V Kamat is the current chairman of the Defence Research and Development Organisation (DRDO).

Additional Information

• Dhanush is the indigenously developed howitzer in India.
• It was manufactured by Kolkata Ordnance Factory.
• Dhanush is also known as 'Desi Bofors'.
• Trishul is a short-range surface-to-air missile(SAM) developed in India.
• It was developed by Defence Research and Development Organisation.

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• It was developed as a part of the Integrated Guided Missile Development Program.
• Prithvi is the first surface to surface missile(SSM) in India.
• It was developed by Defence Research and Development Organisation.
• It was the first indigenously built missile of India.

Q47. Answer: (c) Buland Darwaza

Buland Darwaza is NOT correct.

Key Points

• Buland Darwaza was built by Mughal emperor Akbar.
• Buland Darwaza is located at Fatehpur Sikri, Agra District in Uttar Pradesh.
• Buland Darwaza was built to commemorate Akbar's victory over Gujarat.
• It was built on mixed Hindu and Persian styles of architecture.
• It is the highest gateway in the world.
• Buland Darwaza is popularly called "Door of victory".

Additional Information

• Humayun's Tomb is a UNESCO World Heritage Site located in Delhi.
• Humayun's Tomb was built by Emperor Akbar.
• The construction was finished in 1572.
• The architecture of the tomb is influenced by Persian architecture.
• The India Gate is a war memorial located in New Delhi.
• It is formerly known as the All India War Memorial.
• The India Gate was designed by Edwin Lutyens.
• Alai Darwaza is the southern gateway of the Quwwat-ul-Islam Mosque located in New Delhi.
• It was built by Sultan Alauddin Khalji in 1311.
• The architecture of India Gate was influenced by Indo-Islamic architecture.

Q48. Answer: (a) GRUNT

The given word: LAUGHTER

GRUNT → LAUGHTER (N is not there in the given word)

GATE → LAUGHTER

HATE → LAUGHTER

RATE → LAUGHTER

Hence, "GRUNT" cannot be formed using the letters of the given word.

Q49. Answer: (b) Navsari

The correct answer is Navsari.

Key Points

• Mahatma Gandhi started the famous ‘Salt March’ from Sabarmati to Dandi in Gujarat.
• Dandi is a village located in the Navsari District of Gujarat.
• Navsari district of Gujarat is located between Surat & Mumbai.
• Navsari is the twin city of Surat.
• According to the Swachh Bharat Urban mission, Navsari is the 23rd "cleanest city of India".
• The Salt Satyagraha or The Dandi march was in 1930.
• In 1930, Mahatma Gandhi undertook the Salt Satyagraha protesting against the British salt laws.
• In 2019, the Government of India constructed a National Salt Satyagraha Memorial at Dandi to commemorate the Salt March of the Indian Independence Movement.

Additional Information

• Surat is a city located at the mouth of the Tapti River in Gujarat.
• Kutch is the largest district of India located in Gujarat.
• Porbandar is a city in Gujarat best known for being the birthplace of Mahatma Gandhi.

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Q50. Answer: (b) Uniform Resource Locator

The correct answer is Uniform Resource Locator.

Key Points

• Uniform Resource Locator is an address used to identify the name of a web resource.
• Uniform Resource Locator is a web address that indicated a webpage.
• Each valid URL points to a unique resource
• https://www.yourmocktest.com is an example of an URL.
• Part of a URL that indicated a particular webpage is known as a domain name.
• Every domain name has a suffix that indicates the top-level domain it belongs to.
• Uniform Resource Locators are also used for file transfer (ftp), email, database access (JDBC), and many other applications.

Q51. Answer: (a) WZPN

According to the question:

RAMO → SCPS

To form the code of a word, the first letter of the word is replaced by its successor, the second letter is replaced by its second successor, the third letter by its third successor and so on as per the English alphabetical series.

Similarly, we can find the code for the word VXMJ,

Hence, "WZPN" is the code for the word VXMJ.

Q52. Answer: (c) 25

Given:

a3 - b3 = 125

a2 - b2 = 25

a + b = 5

Formulas used:

a2 - b2 = (a + b) (a - b)

a3 - b3 = (a - b) (a2 + ab + b2)

Calculation:

a2 - b2 = 25

=> (a + b)(a - b) = 25

=> 5(a - b) = 25

=> (a - b) = 5

a3 - b3 = 125

=> (a - b) (a2 + ab + b2) = 125

=> 5 × (a2 + ab + b2) = 125

=> (a2 + ab + b2) = 125/5 = 25

Therefore The value of (a2 + ab + b2) is 25

Q53. Answer: (a) Shri Neelam Sanjiva Reddy

The correct answer is Shri Neelam Sanjiva Reddy.

Key Points

• Neelam Sanjiva Reddy was the sixth president of India.
• He served as the President of India from 1977 to 1982.
• He was the youngest President of India.
• He is the only one Indian president to get elected unopposed.
• He is the only person to become president of India after failing in the previous presidential election.
• He worked with Prime Ministers Morarji Desai, Charan Singh and Indira Gandhi as president of India.
• He is the first person to become the president of India after becoming the chief minister of a state.
• He is the first speaker of Lok Sabha to resign from the post.

Additional Information

• Dr Rajendra Prasad is the first president of India.
• He served as the President of India from 1950 to 1962.
• Dr S.Radhakrishnan is the second president of India.

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• He served as the President of India from 1962 to 1967.
• Dr Zakir Hussain is the third president of India.
• He served as the President of India from 1967 to 1969.

Q54. Answer: (c) 5/72

Given:
Sum of the numbers = 60
HCF = 12
LCM = 72
Formula used:
Product of two numbers = HCF × LCM
Calculation:
Let the numbers be a and b.
Product of two numbers = HCF × LCM
=> ab = 12 × 72
The sum of two numbers is 60
=> a + b = 60
According to the question,
Sum of reciprocal of the number = 1/a + 1/b
=> (a + b)/ab
=> 60/(12 × 72)
=> 5/72
Therefore The sum of reciprocal of a and b = 5/72.

Q55. Answer: (b) 50

Given:
The greatest number that will divide 155, 260, 315 and leave the remainder 5, 10 and 15
Calculation:
In order to make 155, 260, and 315 divisible by the greatest number, we need to subtract 5, 10, and 15 from each term respectively.
155 - 5 = 150, 260 - 10 = 250, 315 - 15 = 300
Now HCF of 150, 250 and 300:
150 = 2 × 3 × 5 × 5
250 = 2 × 5 × 5 × 5
300 = 2 × 2 × 3 × 5 × 5
Hence, HCF of 150, 250 and 300 = 50
Therefore The greatest number that will divide 155, 260 and 315 and leave the remainder 5, 10 and 15 respectively is 50.

Q56. Answer: (a) 27

Given:
180 ÷ (23 + 32 + 1) + 37 - 20
Calculation:
180 ÷ (23 + 32 + 1) + 37 - 20
=> 180 ÷ (8 + 9 + 1) + 17
=> 180/18 + 17
Therefore The required value = 10 + 17 = 27

Q57. Answer: (d) 88°

Shortcut Trick
Sum of angles in a triangle is always 180°.
Total x parts → 2x + 3x + 5x = 10x
Total constant values → −8 − 12 = −20
10x − 20 = 180 => 10x = 200 => x = 20

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Compare: 2(20)=40, 3(20)−8=52, 5(20)−12=88

Therefore The correct answer is 88°.

Alternate Method

Given: Angles are 2x, (3x − 8), and (5x − 12).

Formula Used: Sum of internal angles of a triangle = 180°

=> 2x + (3x − 8) + (5x − 12) = 180

=> 10x − 20 = 180

=> 10x = 180 + 20

=> 10x = 200

=> x = 20

Calculating each angle:

=> First angle = 2 × 20 = 40°

=> Second angle = 3 × 20 − 8 = 52°

=> Third angle = 5 × 20 − 12 = 88°

Therefore The correct answer is 88°.

Additional Information

Types of Triangles by Angles

Acute (all < 90°), Right (one = 90°), and Obtuse (one > 90°). This specific triangle is Acute.

Exterior Angle Theorem

The exterior angle of a triangle is equal to the sum of its two opposite interior angles.

Triangle Inequality

The sum of any two sides of a triangle must be strictly greater than the third side.

Q58. Answer: (a) Rs. 525

Given:

SI = Rs. 500

Formulas used:

SI = Principal × Time × Rate/100

Compound Interest = Amount - Principal

Amount = Principal × (1 + R/100)^t

Calculation:

SI = 500 = P × 2 × 10/100

=> Principal = Rs. 2500

Compound Interest = 2500 × (1 + 10/100)² - 2500

=> Rs. 3025 - Rs. 2500 = Rs. 525

Therefore The required Compound Interest = Rs. 525

Alternate Method Effective rate of compound interest for 2 years = a + a + a × a/100

=> 10 + 10 + 10 × 10/100 = 21%

Compound Interest = 2500 × 21/100 = 525

Q59. Answer: (c) 10002

Concept:

Dividend = Divisor × Quotient + Remainder

Calculation:

Smallest 5-digit number = 10000

Required number = 7 × Quotient + 6

Now, 10000 = 7 × 1428 + 4

As we need 6 as the remainder,

So, by adding 2 on both sides,

=> 10000 + 2 = 7 × 1428 + 4 + 2

=> 10002 = 7 × 1428 + 6

Therefore The required 5 - digit smallest number is 10002

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Q60. Answer: (c) A Achuthan Namboothiri

The correct answer is A Achuthan Namboothiri.

Key Points

• Akkitham Achuthan Namboothiri was the 55th winner of the Jnanpith Award in 2019.
• He was an Indian poet and essayist who wrote in Malayalam.
• He was honoured with the Odakkuzhal Award in 1973.
• He was honoured with the Vallathol Award in 1997.
• He was honoured with the Ezhuthachan Puraskaram in 2008.
• He was honoured with the theVayalar Award in 2012.
• He was honoured with the Padma Shri in 2017.
• Notable works of Akkitham Achuthan Namboothiri are:
• Irupatham Noottandinte Ithihasam.
• Balidarshanam.
• Nimisha Kshetram.
• Idinju Polinja Lokam.
• Kedatha Sooryan
• On 11 April 2022, Eminent Assamese poet Nilamani Phookan has conferred the 56th Jnanpith Award for the year 2021.

Additional Information

• Krishna Sobti was an Indian Hindi-language writer.
• She was born in Gujrat, India.
• She writes under the pseudonym Hashmat.
• Krishna Sobti awarded the 53rd Jnanpith Award 2017.
• She died on 25 January 2019.
• Notable works of Krishna Sobti are:
• Zindaginama.
• Jaini Meharban Singh.
• Mitro Marajani.
• Daar Se Bichchuri.
• Tin Pahad.
• Chitra Mudgal is an Indian Writer who became the first Indian woman to receive the coveted Vyas Samman.
• Shobha Rao is an American novelist who won the 2014 Katherine Anne Porter Prize.

Q61. Answer: (c) 1986

The correct answer is 1986.

Key Points

• The Environment (Protection) Act was passed by the Parliament of India in 1986.
• The act was passed In the wake of the Bhopal gas Tragedy in Madhya Pradesh.
• The act came into force on 19 November 1986.
• The main objective of the act is to providing protection and improvement of the environment.
• Environment Protection Act 1986 consists of 26 sections and 4 chapters.
• It was enacted under Article 253 of the Indian Constitution
• The Act was last amended in 1991.

Q62. Answer: (c) Japan

Japan is NOT correct.

Key Points

• Among the options, only Japan is NOT a permanent member of the United Nations Security Council.
• The United Nations Security Council is one of the principal organs of the United Nations.
• United Nations Security Council has 15 Members, and each Member has one vote.
• Among these 15 members, 5 are permanent members and 10 are non-permanent members.
• Permanent members:

1. China.

2. France.
3. Russia.
4. The United Kingdom.
5. The United States.

• Non-permanent members:

1. Estonia.
2. India.
3. Ireland.
4. Kenya.
5. Mexico.
6. Niger.
7. Norway.
8. Saint Vincent and the Grenadines.
9. Tunisia.
10. Vietnam.

Additional Information

• The Security Council held its first session on 17 January 1946 at Church House, Westminster, London.

• Since its first meeting, the Security Council has taken permanent residence at the United Nations Headquarters in New York City.

• In August 2021, India took over the presidency of the United Nations Security Council (UNSC) for a duration of one month.

• India's next month of the Council presidency will be in December 2022.

Q63. Answer: (d) 10

Given:

To complete a piece of work:

X + Y take 12 days

Y + Z take 18 days

X + Z take 15 days

Formula used:

Total work = Efficiency × No of days

Calculation:

Let the total work be the LCM of 12, 18 and 15 = 180

Days	Work	Efficiency
X + Y = 12		15
Y + Z = 18	180 units	10
X + Z = 15		12

By adding the efficiencies.

X + Y + Y + Z + X + Z = 15 + 10 + 12

=> 2(X + Y + Z) = 37

=> (X + Y + Z) = 37/2

Total work = 180 = 37/2 × No of days

=> No of days = 9.729 or 10

Therefore The required no of days taken by X, Y and Z = 10

Q64. Answer: (c) brain

Paediatrics is the branch of medical science that deals with children.

Similarly, neurology is the branch of medical science that deals with the human brain.

Hence, "brain" is the correct answer.

Additional Information

The study of heat is called Thermodynamics.

The study of eyes is called Opthalmology.

The study of veins is called Vascular studies.

Q65. Answer: (d) mean

Concept:

Mode = It is a number that is present most often in a given set of numbers. For example, a manufacturer wants to know the size of shoes that has maximum demand. Here, Mode is the most appropriate measure. However, it doesn't represent all the numbers or items in a given set.

Median = It is the middle element when the data set is arranged in order of the magnitude (from lower to higher). It remains unchanged if, there is any change in the largest or smallest item.

Range = It is the difference between the largest and smallest values in a given set of number.

Mean = Mean or Arithmetic mean is the most commonly used average. It is based on all the observations or given set of numbers.

Therefore Measure of central tendency or average are used to summarize the data and mean is the most appropriate average value in measuring central tendency as it represents all the items in a given set of data.

Q66. Answer: (d) Lichen

The correct answer is Lichen.

Key Points

• A mutual relationship in which organisms live together and share their shelter and nutrients is called a symbiotic relationship.

• Lichens are made up of two or more closely interacting organisms, a fungus, and one or more partners called photobionts.

• Lichens are an association of alga and fungus living together for their mutual benefits

• The fungus provides shelter and maintains the humidity for alga inside the lichen body, necessary for the alga for the process of photosynthesis.

• The alga in return provides the food material, prepared during photosynthesis to the fungus.

• Examples of symbiotic relationships are:

• Relation between bee and a flower.

• Rhizobium bacteria and leguminous plants.

• Relationship between an anemone (Heteractis Magnifica) and a clownfish (Amphiron ocellaris).

Q67. Answer: (a) Maldives

Maldives is NOT correct.

Key Points

• BIMSTEC is the acronym for Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation.

• It is a regional organization comprising seven Member States lying in the littoral and adjacent areas of the Bay of Bengal constituting a contiguous regional unity.

• BIMSTEC came into being on 6 June 1997.

• Seven countries are members of BIMSTEC:

1. Bangladesh
2. Bhutan
3. India
4. Nepal
5. Sri Lanka
6. Myanmar
7. Thailand

Q68. Answer: (b) 2.5

Calculation:

$(\sqrt{54}\times\sqrt{125})/(\sqrt{24}\times\sqrt{45})$

$=> 3\sqrt{6} \times 5\sqrt{5} / 2\sqrt{6} \times 3\sqrt{5}$

$=> 3 \times 5/ 2 \times 3$

$=> 5/2 = 2.5$

Therefore The required result = 2.5

Q69. Answer: (b) 10

Formulas used:

sec (90 - x) = cosec x

cot (90 - x) = tan x

Calculation:

5 sin 14° sec 76° + 3 cot 15° cot 75° + 2 tan 45°

=> 5 sin 14° cosec 14° + cot 15° tan 15° + 2 × 1 [tan 45° = 1]

=> 5 sin 14°. 1/sin 14° + 3 cot 15. 1/cot 15° + 2 [cosec x = 1/sin x]

=> 5 + 3 + 2 [cot x = 1/tan x]

Therefore The required result = 10

Q70. Answer: (d) Paraguay and Bolivia

The correct answer is Paraguay and Bolivia.

Key Points

• South America is one of the seven continents in the world.

• Paraguay and Bolivia are the two landlocked countries in South America.

• A landlocked country is a country that has no access to marine water bodies and is entirely bordered by land.

• Paraguay and Bolivia have a navy despite not having a sea border.

Important Points

• Asuncion is the capital of Paraguay.

• Guaraní is the currency of Paraguay.

• Bolivia is a landlocked country located in western-central South America.

• Sucre is the capital of Bolivia.

• Boliviano is the currency of Bolivia.

Additional Information

• The South American continent generally includes 12th Sovereign States:

1. Argentina.
2. Bolivia.
3. Brazil.
4. Chile.
5. Colombia.
6. Ecuador.
7. Guyana.
8. Paraguay.
9. Peru.
10. Suriname.
11. Uruguay.
12. Venezuela.

Q71. Answer: (c) 46%

Given:

Total students in the class sponsored the musical programme = 50 girls + 70 boys = 120

Calculation:

No of girls attended the programme = 50 × 40/100 = 20

No of boys attended the programme = 70 × 50/100 = 35

According to the question,

=> (20 + 35)/120 x 100

=> 45.83% or 46%

Therefore The required percentage of class is 46%

Q72. Answer: (a) 8

The given series: 3 X ! I B O # F 4 5 * 1 K 2 $ 8 R 8 % Z

If we drop all the special characters from the series, we get:

3 X I B O F 4 5 1 K 2 8 R 8 Z

Hence, "8" is the 10th term to the right of 'X'.

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Q73. Answer: (d) Shri Guru Gobind Singh ji

The correct answer is Shri Guru Gobind Singh ji.

Key Points

• Guru Gobind Singh was the tenth Guru of the Sikhs.
• He is the son of Guru Tegh Bahadur.
• He was born in Patna, Bihar in 1666.
• Khalsa Panth, a community that considers Sikhism as its faith was founded by Guru Gobind Singh.
• Guru Gobind Singh was considered as the last human Sikh Guru.

Additional Information

• Shri Guru Tegh Bahadur was the ninth Guru of the Sikhs.
• He is the second Sikh martyr.
• He was born at Amritsar in Punjab in 1621.
• Guru Tegh Bahadur was executed in Delhi in 1675 under the orders of the Mughal Emperor Aurangzeb.
• Shri Guru Nanak Dev Ji is the founder of the Sikh religion.
• Guru Nanak was born on 14th April 1469 at Rai Bhoi di Talvandi(Present day Nankana Sahib) in Pakistan.
• His birthplace is marked by Gurdwara Janam Asthan.
• He is considered the first of the ten Sikh Gurus.
• Shri Guru Hargobind was the sixth of ten Gurus of the Sikh religion.
• The process of militarization in Sikhism was introduced by Guru Hargobind.
• The Akal Takht, one of five takhts (seats of power) of the Sikhs was built by Shri Guru Hargobind.

Q74. Answer: (c) 1584 cm^3

Given:

The curved surface area of cylinder = 528 cm2

Height = 14 cm

Formulas used:

Curved surface area = $2\pi RH$

Volume = πR^2H

Calculation:

CSA = 528 = 2 × 22/7 × R × 14

=> R = 6 cm

Volume of the Cylinder = 22/7 × 6 × 6 × 14 = 1584 cm^3

Therefore The volume of cylinder = 1584 cm3

Q75. Answer: (c) 1/2

Calculation:

Let the length of the rope be = 20 units

So, length of the first part = 20 × 1/5 = 4 units

Length of the second part = 20 × 1/5 × 3/2 = 6

=> Length of the third part of the rope = 20 - 4 - 6 = 10 units

Therefore Fraction of third part out of the whole rope = 10 units /20 units = 1/2

Q76. Answer: (b) 3.27

Given:

52/3 + 0.73 - 3.123

Calculation:

52/3 + 0.73 - 3.123

=> 17/3 + 0.73 - 3.123

=> 17/3 - 2.393

=> 5.667 - 2.393

=> 3.273

Therefore The required result = 3.273 or 3.27

Q77. Answer: (c) 200 km

Shortcut Trick

Relative Distance remaining after 0.5 hour = 725 − (50 × 0.5) = 700 km.

Relative Speed = 50 + 150 = 200 kmph.

Meeting time from B's start = 700 ÷ 200 = 3.5 hours.

Total distance from Station A = (50 × 0.5) + (50 × 3.5) = 25 + 175 = 200 km.

Therefore The correct answer is 200 km.

Alternate Method

Given: Speed of Train 1 = 50 km/hr, Speed of Train 2 = 150 km/hr, Distance = 725 km.

Formula Used: Distance = Speed × Time; Relative Speed (Opposite) = S1 + S2.

=> Distance covered by Train 1 in 30 mins = 50 × (1/2) = 25 km.

=> Remaining distance = 725 − 25 = 700 km.

=> Time taken to meet = Remaining Distance ÷ Relative Speed

=> Time = 700 ÷ (50 + 150) = 700 ÷ 200 = 3.5 hours.

=> Distance from A = (Distance in 0.5 hr) + (Distance in 3.5 hrs)

=> Distance from A = 25 + (50 × 3.5) = 25 + 175 = 200 km.

Therefore The correct answer is 200 km.

Additional Information

Relative Speed

When two objects move in opposite directions, relative speed is the sum (S1 + S2). When they move in the same direction, it is the difference (S1 − S2).

Meeting Point Calculation

Meeting time = (Initial distance between them at the same start time) ÷ Relative speed. Ensure both speeds are in the same units.

Average Speed

For a round trip with speeds a and b, Average Speed = 2ab ÷ (a + b). For general cases, Total Distance ÷ Total Time.

Q78. Answer: (b) 60 kg

The correct answer is 60 kg.

Key Points

• The mass of man on the surface of the moon will remain the same as on earth.
• Mass doesn’t change according to location.
• The mass of a body is the same on Earth and Moon and is equal to 60kg.
• Mass is the measure of the amount of matter in a body.
• The SI unit of mass is kilogram (kg).
• Mass is a scalar quantity and It has magnitude.
• The mass of a body is not dependent on time.
• Mass is not dependent on gravity.
• Mass can never be zero.

Mistake Points

• Weight is defined as a measure of the gravitational force on that body at that place.
• Weight = Mass x Surface Gravity.
• Surface Gravity on Moon = 1/6Surface Gravity on Earth
• Surface Gravity on Earth= 9.8 m/s².
• Weight on moon = 60 × 1/6×9.8
• Weight on moon= 98 N.

Q79. Answer: (b) 1

Given:

x/2+2/y=1

y/2+2/z=1

Calculation:

x/2+2/y=1 = x/2 = 1 - 2/y

2/x = y/(y-2) ---- (1)

y/2+2/z=1 = 2/z= 1- y/2

z/2= 2/(2-y) ---- (2)

By adding 1 and 2.

z/2 + 2/x= 2/(2-y)+y/(y-2)

=> 2/(2-y)-y/(2-y) = (2-y)/(2-y)

Therefore The result is 1

Q80. Answer: (c) Shimla

The correct answer is Shimla.

Key Points

• Central Potato Research Institute (CPRI) is located at Shimla in Himachal Pradesh.

• It was initially established in 1949 at Patna in Bihar, India.

• The institute was later shifted to Shimla, Himachal Pradesh in 1956 in order to facilitate hybridization work in potato breeding and maintain seed potato health.

• Central Potato Research Institute was created on the recommendation of Sir Herbert Steward(Agricultural Advisor to the Government of India).

• It was transferred to the Indian Council of Agricultural Research in April 1966.

• Central Potato Research Institute has 7 regional stations:

1. Kufri-Fagu (Himachal Pradesh).
2. Modipuram (Uttar Pradesh).
3. Jalandhar (Punjab).
4. Gwalior (Madhya Pradesh).
5. Patna (Bihar).
6. Shillong (Meghalaya).
7. Ootacamund (Tamil Nadu).

Q81. Answer: (d) 2013

The correct answer is 2013.

Key Points

• ISRO launched its Mars Orbiter Mission on 5^(th) November 2013.

• It was the maiden interplanetary mission of ISRO.

• The mission got inserted into Martian orbit on 24^(the)September 2014 in its first attempt.

• The mission completed its 1000 Earth days in its orbit on 19^(th) June 2017.

• The mission was launched with an objective to explore and observe Mars surface features, morphology, mineralogy and the Martian atmosphere.

• Mars Orbiter Mission was launched with an XL variant of the PSLV, PSLV C-25.

• Mars Orbiter Mission made ISRO the fourth space agency to achieve this feat after Roscosmos, NASA, and the European Space Agency.

• India is the first Asian country to reach Martian orbit as well as the first nation in the world to achieve this in its maiden attempt.

• The Mars Orbiter Mission (MOM) is also called Mangalyaan.

Q82. Answer: (c) 684

Calculation:

Let the number to be added = y

According to the question:

y + 12% of 2400 = 18% of 5400

=> y + 12/100 × 2400 = 18/100 × 5400

=> y + 288 = 972

Therefore y is 684

Q83. Answer: (b) 128 cm²

Given:

Perimeter of the rectangle = 48cm

Length of the rectangle = 2 x breadth

Formulas used:

Perimeter of the rectangle = 2(l + b)

Area of the rectangle = l x b

Calculation:

Let the breadth of the rectangle be = y

=>Length = 2y

Perimeter of the rectangle = 2(2y + y)

=> 48cm = 2 x 3y

=> (Breadth) y = 8cm

=> (Length) 2y = 16 cm

Therefore Area of the rectangle = 16 x 8 = 128 sq.cm

Q84. Answer: (a) a; c; b; c; b

Given :- c _ b b a _ c a b _ a c _ a b _ a c

By checking options and substituting accordingly.

1) a; c; b; c; b → c a b b a c - c a b b a c - c a b b a c

• Option (1) gives a pattern of c a b b a c - c a b b a c - c a b b a c

2) a; b; c; b; c → c a b b a b - c a b c a c - b a b c a c

3) b; a; b; c; c → c b b b a a - c a b b a c - c a b c a c

4) b; c; a; c; b → c b b b a c - c a b a a c - c a b b a c

Hence, "a; c; b; c; b" is the correct answer.

Q85. Answer: (c) (-21)/4

Shortcut Trick

Given sin θ = 3/5 and cos θ = 4/5, we find tan θ = 3/4 and cot θ = 4/3.

Substitute into the expression: (1 + 3/4) ÷ (1 − 4/3)

=> (7/4) ÷ (−1/3) = (7/4) × (−3) = −21/4

Therefore The correct answer is −21/4.

Alternate Method

Given: sin θ = 3/5, cos θ = 4/5

Using Trigonometric Identities:

=> tan θ = sin θ ÷ cos θ = (3/5) ÷ (4/5) = 3/4

=> cot θ = 1 ÷ tan θ = 4/3

Now, substitute these into the required expression (1 + tan θ) / (1 − cot θ):

=> Numerator = 1 + 3/4 = (4 + 3)/4 = 7/4

=> Denominator = 1 − 4/3 = (3 − 4)/3 = −1/3

=> Result = (7/4) ÷ (−1/3)

=> Result = (7/4) × (−3/1) = −21/4

Therefore The correct answer is −21/4.

Additional Information

Trigonometric Ratios

tan θ = Perpendicular/Base and cot θ = Base/Perpendicular. They are reciprocals of each other.

Pythagorean Identity

For any angle θ, $\sin^2\theta + \cos^2\theta = 1$. In this case, $(3/5)^2 + (4/5)^2 = 9/25 + 16/25 = 1$.

Quotient Identities

tan θ = sin θ / cos θ and cot θ = cos θ / sin θ.

Q86. Answer: (a) 16

Here,

(21 + 1)/2 = 11

→ 21 : 11

Similarly,

(31 + 1)/2 = 16

→ 31 : 16

Hence, 16 is the correct answer.

Q87. Answer: (c) 75

The given table:

28	63	94
8	18	?
6	9	13

The pattern followed here is:

In column I,

$6^2 - 8 = 28$

36 - 8 = 28

In column II,

$9^2 - 18 = 63$

81 - 18 = 63

Similarly, in column III,

$13^2 - ? = 94$

169 - ? = 94

? = 169 - 94

? = 75

Hence, "75" will replace the question mark in the table.

Q88. Answer: (c) T is Q's husband

1) P is the brother of Q and R.

2) S is R's mother.

Implies, S is the mother of P, Q, and R.

3) T is P's father.

Implies, T is the husband of S.

Options:

1) T is S's husband → True

2) S is P's mother → True

3) T is Q's husband → False because T is Q's father.

4) T is Q's father → True

Hence, "option (3)" is the answer.

Q89. Answer: (c) TOUGH

The given word: DAUGHTER

HURT → DAUGHTER

GET → DAUGHTER

TOUGH → DAUGHTER (O is not present in the given word)

DATE → DAUGHTER

Hence, "TOUGH" cannot be formed using the letters of the word DAUGHTER.

Q90. Answer: (d) Orange

The given figure:

From the first two positions of dice, it is clear that orange, yellow, and purple are adjacent to blue. Also, as the position of blue is the same in both the two dices and the dice have been rotated by 90 degrees, we can safely say that yellow and purple are opposite each other.

Yellow <=> Purple

Now, if we observe the third and fourth positions of dice, we can say that blue, yellow, and pink are adjacent to black. Also, as purple is opposite yellow the fourth adjacent side would be purple. Thus, now only one colour is left i.e. orange.

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Hence, "orange" is opposite black.

Q91. Answer: (a) Manjeet and Amita

1) Aastha is a neighbour of Shyam and she is on the left end of the row.
2) Sunil is a neighbour of Manjeet, Manjeet is exactly in the middle of the row.
Implies, Amita is sitting on the rightmost end of the row.
Hence, "Manjeet and Amita" are the neighbours of Sunil.

Q92. Answer: (d) 4

The given series: 69, 55, 26, 13, ?
The logic follows here:
Previous number digits multiply with each other + 1 = next number.
The pattern followed here is:
6 × 9 + 1 = 55
5 × 5 + 1 = 26
2 × 6 + 1 = 13
1 × 3 + 1 = 4
Hence, the next number of the series would be "4".

Q93. Answer: (b) Reena

1) Meena is sitting at the west end and Teena is sitting at the east end.
2) Beena is sitting to the left of Leena and to the right of Meena.
3) Leena and Reena are sitting together next to each other.
Hence, "Reena" is second from the east end.

Q94. Answer: (b) 94; 115

The given series: 97, 86, 101, 89, 107, ?, ?
It is an alternate series.
Series 1 : 97, 101, 107, ?
Series 2: 86, 89, ?
In the first series, from left to right, the difference between two consecutive numbers is consecutive even numbers.
In the second series, from left to right, the difference between two consecutive numbers is consecutive off numbers.
Hence, the next two numbers are "94 and 115".

Q95. Answer: (b) Only conclusion I follows.

The Venn Diagram for the given data:
Conclusions:
I. Some Red are Paints → True (as some red are colours and all colours are paints.)
II. All Red are Roses → False (all roses are red which means that some red are roses.)
Hence, "only conclusion I follows".

Q96. Answer: (c) MNPO

The logic followed here is:
Option1: IKJL
Option 2: EGFH
Option 3: MNPO
Option 4: ACBD
Here, MNPO doesn't follow the pattern.
Here, the correct answer is "MNPO".
Alternate Method
Except for MNPO, all other terms start with a vowel. 'MNPO' does not start with a vowel, rather it ends on a vowel.
Hence, "MNPO" is different from the others.
Note: A, E, I, O, and U are vowels and rest are consonants.

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Q97. Answer: (a) Paper : note

In all pairs, except for 'paper : note', we cover the first term with the second term.
We cover a gift using gift wrap.
We cover our heads with a cap.
We cover our hands with gloves.
On the other hand, we cover a piece of paper with an envelope.
Hence, "paper : note" is different from the others.

Q98. Answer: (c) 32

The number of triangles:
Hence, the correct answer is "32".
Shortcut Trick
The number of triangles in ABC:
The number of triangles in ABC = ACD, ADE, AEF, ABF, ACE, ADF, AEB, ACF, ADB, ABC
Thus, there are 10 triangles in ABC.
Implies, there are 30 triangles in ABC, HIB, and CGI.
Also, there are two more triangles i.e. BCI, and AGH.
Total triangles = 30 + 2
Total triangles = 32
Hence, there are "32" triangles in the figure.

Q99. Answer: (a) 37

The given series: 5, 10, 17, 26, ?
From left to right, the difference between any two consecutive numbers is consecutive odd numbers.
Hence, "37" will replace the question mark in the series.

Q100. Answer: (c) 26, 34

According to the question, Deepti is 14th from the left and Mohan is 9th from the right.
When Deepti and Mohan interchange their positions, Mohan becomes 21st from the right.
The number of people to the left of Deepti = 13 + 11 + Mohan = 25
Position of Deepti from the left = 26^(th)
Total number of people in the row = 13 + 11 + 8 + Mohan + Deepti
Total number of people in the row = 34
Hence, Deepti is "26^(th) from the left and there are 34 people in the row".

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