RRB NTPC CBT-I Official Paper (Held On: 17 Feb 2021 Shift 2) (Previous Year Paper)

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

Take this paper as a timed mock test

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

Q1. Select the option that is related to the fourth term in the same way as the first term is related to the second term.

Xylem : Plants : : ? : Human

(a) Kidney
(b) Heart
(c) Liver
(d) Arteries

Q2. If x - y = 5 and xy = 15, then what is the value of x3 - y3?

(a) 350
(b) 250
(c) 125
(d) -100

Q3. Which of the following is an ore of thorium?

(a) Torbernite
(b) Pitchblende
(c) Monazite
(d) Carnotite

Q4. Which of the following statements is NOT correct?

(a) The United Nations (UN) has six language official languages.
(b) The term of a judge in the International Court of Justice (ICJ) is five years.
(c) The United Nations Security Council (UNSC) has five permanent members.
(d) The International Court of Justice (ICJ) has fifteen judges.

Q5. The Deccan Odyssey is a:

(a) botanical garden
(b) luxury train
(c) cricket stadium
(d) five-star hotel

Q6. Kalpana-1 is a _____ satellite

(a) navigation
(b) military
(c) meteorological
(d) communication

Q7. The boiling point of liquid nitrogen is:

(a) -27 ^oC
(b) -132 ^oC
(c) -273 ^oC
(d) -196 ^oC

Q8. What is the sum of two smallest natural numbers, each of the two having exactly seven factors?

(a) 843
(b) 625
(c) 793
(d) 736

Q9. What is the product of the LCM and the HCF of 15 and 25?

(a) 375
(b) 225
(c) 150
(d) 75

Q10. Select the pair that is NOT matched correctly (the dam of the river it is built on).

(a) Nagarjuna Sagar Dam- Krishna river
(b) Tehri Dam- Bhagirathi river
(c) Nathpa Jakri Dam-Jhelum river
(d) Indira Sagar Dam-Narmada river

Q11. Rohan had to travel from A to B. He covers 75% of the distance at a speed of 60 km/h and the remaining distance at a speed of 40 km/h. What was his average speed for the entire journey?

(a) 531/3 km/h
(b) 542/3 km/h
(c) 55 km/h
(d) 50 km/h

Q12. If x3 - 9x2 + 26x - 24 = 0, then which of the values of x given in the options will provide an INCORRECT solution to the given equation?

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

Q13. Select the odd group of words from the following four options

(a) Physics, Chemistry, Biology
(b) French, Biochemistry, Economics
(c) Mathematics, Sociology, English
(d) Political Science, Sanskrit, Geography

Q14. Which of the following is depicted on the Indian 200-rupee note?

(a) Mangalyaan
(b) Ellora Caves
(c) Sunchi Stupa
(d) Red Fort

Q15. In a certain code language, PINTEREST is written LEJPANAOP how will be 'VIBER' be written as in that language ?

(a) REXAN
(b) REAXN
(c) RXAEN
(d) RXEAN

Q16. Arrange the following words in the order in which they appear in an English dictionary.

1) Retail 2) Remark 3) Reward 4) Remote 5) Revoke

(a) 13245
(b) 24135
(c) 42153

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(d) 24153

Q17. The LCM of 6, 9 and x is 72. Which of the given options can be a possible value of x?

(a) 12
(b) 36
(c) 18
(d) 24

Q18. The Komagata Maru was a_____steamship

(a) Japanese
(b) Chinese
(c) Canadian
(d) British

Q19. Ashoka the Great, belonged to the:

(a) Maurya Dynasty
(b) Gupta Dynasty
(c) Shunga Dynasty
(d) Chola Dynasty

Q20. If three numbers are in the ratio of 4 : 3 : 8 and the smallest of these numbers is 42, find the largest fo these numbers.

(a) 104
(b) 96
(c) 120
(d) 112

Q21. Who has been awarded the Nobel prize for his research on transmission of malaria?

(a) Karl Landsteiner
(b) Paul Lauterbur
(c) Robert G Edwards
(d) Ronald Ross

Q22. If θ = 30°, then what will be the value of sin θ cos θ ?

(a) (√(3))/2
(b) 3/8
(c) (√(3))/4
(d) (√(3))/6

Q23. Which of the following options is 6^(th)to the right of the 17^(th) letter from the left in the English alphabet ?

(a) U
(b) S
(c) D
(d) W

Q24. Select the number that will come next in the following series.

619, 656, 693, 730, ?

(a) 787
(b) 767
(c) 757
(d) 777

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Q25. Rani is the mother of a girl named Preeti. Aishwarya is the maternal aunt of a girl named Kajol. Priyanka has only two children, Rani and Aishwarya. Seema is the daughter of Aishwarya. How is Kajol related to preeti?

(a) Daughter
(b) Mother's Sister
(c) Sister's Daughter
(d) Sister

Q26. which of the following statements is NOT correct ?

(a) Uttar Pradesh is the largest producer of sugarcane in India.
(b) Kerala is the largest producer of rubber in India.
(c) Punjab is the largest producer of wheat in India.
(d) Assam is the largest producer of tea in India.

Q27. If '+' means 'division', '-' meanse 'multiplication', '×' means 'addition' and '÷' means 'subtraction', then find the value of 72 + 8 - 3 × 6 ÷ 2.

(a) 7
(b) -1
(c) 31
(d) 71

Q28. If 28% of a number is 20, then what is the value of 49% of the same number ?

(a) 35
(b) 45.5
(c) 38.5
(d) 42

Q29. Five friends A, B, C, D and E live in a society. All of them like the cars Brand P, Brand Q, Brand R, Brand S and Brand T, of a particular colour, blue, grey, white, silver and black but not in the order as given.

a. A likes black car but not Brand T.
b. D does not like silver car. He prefers Brand S.
c. E does not like Brand R and Brand T.
d. C likes blue Brand R.
e. One of them likes Silver Brand Q
f. B likes white car

Who likes Brand Q?

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

Q30. Which of the following shooters has NOT won a medal in the Olympics ?

(a) Rajyavardhan Singh Rathore
(b) Vijay Kumar
(c) Jitu Rai
(d) Gagan Narang

Q31. Select the alphanumeric term that can replace the question mark (?) in the following series.

E972D, H324E, K108G, N36J, Q12N, ?

(a) S4T
(b) R9T
(c) T6S
(d) T4S

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Q32. If the average of 6 integers is 45 and the difference between the largest and the smallest of these 6 numbers is18, then what is the minimum value possible for the smallest of these 6 integers?

(a) 27
(b) 31
(c) 29
(d) 30

Q33. A sum of money, when invested at 10% compound interest per annum, amounts to Rs. 1815 after 2 years. What is the original sum that was invested in the beginning?

(a) Rs. 1,500.00
(b) Rs. 1550.00
(c) Rs. 1512.50
(d) Rs. 1475.00

Q34. 36% of x = 81% of y, Find x : y.

(a) 4 : 9
(b) 81 ; 100
(c) 9 : 25
(d) 9 : 4

Q35. National Highway 48 (NH48) extends from:

(a) Delhi to Hyderabad
(b) Delhi to Guwahati
(c) Delhi to Chennai
(d) Delhi to kolkata

Q36. If 19 × 19 = 361then what will be the value of 190 × 0.0019?

(a) 3.61
(b) 0.361
(c) 0.00361
(d) 0.0361

Q37. "Beetles' is related to 'Crawl' in the same way as 'Cows' is related to ' _____ '.

(a) Float
(b) Moo
(c) Walk
(d) Junp

Q38. One carbon credit contains:

(a) 1000 kg of carbon dioxide
(b) 100 kg of carbon dioxide
(c) 1 kg of carbon dioxide
(d) 10 kg of carbon dioxide

Q39. The Rail Coach Factory (RFC) is located in which city of Punjab?

(a) Kapurthala
(b) Amritsar
(c) Bathinda
(d) Ludhiana

Q40. The novel 'Tamas' has been writtern by :

(a) Khushwant Singh
(b) RK Narayana
(c) Bhisham sahani
(d) Amrita Pritam

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Q41. Which of the following alloys does NOT contain tin ?

(a) Gun metal
(b) Bronze
(c) Bell metal
(d) Brass

Q42. Which of the following is NOT correct with respect to amendments in the Constitution of India ?

(a) 72^(nd) amendment - to make provisions for setting up Rent Control Tribunals
(b) 101^(st)amendment - to introduce goods and service tax
(c) 61^(st)amendment - to reduce the voting age from 21 to 18 years
(d) 102^(nd)amendment - to give constitutional status to the National Commission for Backward Classes

Q43. If sin θ - cos θ = (√(3))/2, then find the positive value of sin θ + cos θ

(a) {3√(3) over 4}
(b) (√(7))/2
(c) (√(5))/2
(d) (7√(3))/2

Q44. Which statement from the given options is NOT correct?

(a) Buddhist scriptures werer written in Pali.
(b) Charak was the personal physician of Gautam Buddha.
(c) Upagupta influence Ashoka to embrace Buddhism.
(d) The birth place of Gautam Buddha is in Nepal.

Q45. 'Story' is related to 'Reader' in the same way as ' _____ ' is related to 'Listener'.

(a) Singer
(b) Song
(c) Lyrics
(d) Dance

Q46. Three of the following four word-paris are alike in a certain way and one is different.
Pick the odd word-pair out.

(a) Show : Hide
(b) Motion : Rest
(c) Live : Die
(d) Fly : Swim

Q47. If you are using Ctrl + A keys in MS Word, what are you trying to do ?

(a) Select all text in the file
(b) Copy all text in the file
(c) Paste text
(d) Close the window

Q48. The Red Panda eats _____ leaves.

(a) bamboo
(b) eucalyptus
(c) pine
(d) maple

Q49. Sonal was given some money to take care of her travel expenses during a 16-day sales drive. However, She had to increase her stay by another 8 days, and as a result her average daily travel allowance went down by Rs. 80. How much was sanctioned to her in the beginning?

(a) Rs. 3,750
(b) Rs. 3,760
(c) Rs. 3,840

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(d) Rs. 3,820

Q50. Three positive integers, a, b, and c, are such that their average is 28 and a ≤ b ≤ c. If the median is (a + 16) then what is the least possible value of c?

(a) 32
(b) 33
(c) 34
(d) 35

Q51. Which of the following is NOT a correct statement?

(a) Capital of Mizoram is Kohima.
(b) Rajasthan is the largest Indian state by area.
(c) Sikkim is the least populous state in India.
(d) The state of Telangana was formed on 2 June 2014

Q52. After offering successive discount of 15% and 12%, there was still a 10% profit on the sale of the item. What is the ratio of the marked price to the cost price of the item?

(a) 110 : 73
(b) 25 : 17
(c) 90 : 73
(d) 2 : 1

Q53. Who once remarked, "Nehru is a patriot, while Jinnah is a politician"?

(a) Aurobindo Ghosh
(b) Jawaharlal Nehru
(c) Rabindranath Tahore
(d) Mohammed Iqbal

Q54. Which of the following satellites was operated by the Indian Institute of Technology Kanpur?

(a) Rohini
(b) Jugnu
(c) Bhaskara
(d) IRS-ID

Q55. What is the HCF of 2/3, 3/4 and 5/6 ?

(a) 1/72
(b) 5/24
(c) 1/12
(d) 5/12

Q56. Select the pair that is matched correctly (the institute to the city it is based in).

(a) Central Leather Research Institute - Salem
(b) Central Arid Zone Research Institute - Jodhapur
(c) Central Potato Research Institute - Dehradhun
(d) Central Drug Research Institute - Kanpur

Q57. Select the option that is different from the rest.

(a) 981
(b) 868
(c) 636
(d) 749

Q58. What is the square root of 66049?

(a) 267
(b) 263
(c) 253

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(d) 257

Q59. Which of the following is nuclear-powered submarine?

(a) INS Shalki
(b) INS Sindhuvir
(c) INS Arihant
(d) INS Kalvari

Q60. Which of the following is herbicide?

(a) Aldrin
(b) DDT
(c) BHC
(d) 2,4-D

Q61. Find the digit in the unit's place of 124^n + 124^((n+1)), where n is any whole number.

(a) 0
(b) 8
(c) 2
(d) 4

Q62. Quit India movement was launched at the _____ session of the All India Congress Committee.

(a) Bombay
(b) Calcutta
(c) Surat
(d) Lahore

Q63. Which of the following competitions is associated with football?

(a) Irani Cup
(b) Santosh Trophy
(c) Duleep Trophy
(d) Deodhar Trophy

Q64. Read the given statement 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:

No star is an elehant.

X is a star.

Conclusions:

i. X is not an elephant.

ii. X may be an elephant.

(a) Only i follows.
(b) Neither i nor ii follows
(c) Both i and ii follow.
(d) Only ii follows.

Q65. Select the correct statement from the given options.

(a) Kudankulam Nuclear Power Station is in Kerala.
(b) Mundra Thermal Power Station is in Madhya Pradesh.
(c) Narora Atomic Power Station is in Uttar Pradesh.
(d) Talcher Super Thermal Power Station is in Andhra Pradesh.

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Q66. A sum of money invested at x% simple interest per annum amounts to Rs. 2,368 in 6 years and to Rs. 3,008 in 11 years. Find the value of x.

(a) 5
(b) 8
(c) 6
(d) 7.5

Q67. The hypotenuse of a right isosceles triangle is 18√(3) cm. Find the area of the triangle.

(a) 486 cm2
(b) 324 cm2
(c) 243 cm2
(d) 268 cm2

Q68. Simplify the given expression. 125 ÷ 5 ÷ 5 × 5

(a) 1
(b) 925
(c) 25
(d) 5

Q69. While selling an item, the difference between selling it at 11% profit and 13% loss is Rs. 204. What is the cost price of the item?

(a) Rs. 850
(b) Rs. 748
(c) Rs. 816
(d) Rs. 765

Q70. Select the pair that is NOT matched correctly (the port to its location).

(a) Paradip Port - Puducherry
(b) Tuticorin Port - Tamil Nadu
(c) Mormugao Port - Goa
(d) Kandla Port - Gujarat

Q71. If the perimeter of a square is 20 cm, then what is its area?

(a) 100 cm²
(b) 400 cm2
(c) 20 cm2
(d) 25 cm2

Q72. Select the pair that is NOT matched correctly (the desert to it's location).

(a) Great Victoria Desert - Australia
(b) Patagonian Desert - Argentina
(c) Sahara Desert - African continent
(d) Kalahari Desert - India

Q73. The full form of BIOS is:

(a) Browser Input/Output System
(b) Basic Input/Output System
(c) Basic Input Operating System
(d) Browser Input Operating System

Q74. A alone can do a work in 14 days, whereas B alone can do it in 21 days. B works alone on day 1 while A works alone on day 2, and the process continues, till the work is completed. How many days in all does it take for the work to be completed?

(a) 8
(b) 16

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(c) 17
(d) 20

Q75. The downslope winds flowing from high elevations from mountains, plateaus, and hills down their slopes to the valleys or planes below are known as:
(a) Anabatic winds
(b) Samoon winds
(c) Shamal winds
(d) Katabatic winds

Q76. A alone can do a task in 39 days, whereas B alone can do it in 52 days, The duo start working together, but A leaves 3 days before the task gets over. For how many days did the two work together?
(a) 20
(b) 21
(c) 201/3
(d) 192/7

Q77. Who is considered as the 'Father of Nuclear Physics'?
(a) J.J Thomson
(b) E.Rutherford
(c) Neils Bohr
(d) J.Chadwick

Q78. How many times have the Asian Games been held in India?
(a) Two
(b) One
(c) Three
(d) Four

Q79. What is the value of $1 - (5/6)^2$?
(a) 1/6
(b) 1/36
(c) 11/36
(d) 4/9

Q80. 100 nibbles are equal to _____ bits.
(a) 400
(b) 512
(c) 256
(d) 200

Q81. ISRO'S communication satellite GSAT-29 carried a high resolution camera named as _____ that is capable of tracking enemy ships in the Indian Ocean.
(a) Third Eye
(b) Geo Vision
(c) Geo Eye
(d) Geo Rakshak

Q82. Which noble gas is radioactive in nature?
(a) Krypton
(b) Neon
(c) Radon
(d) Argon

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Q83. What is the LCM of (3)/(8), (9)/(20) and (15)/(16)?

(a) (16)/(9)
(b) (3)/(4)
(c) (45)/(4)
(d) (9)/(16)

Q84. Which of the following cities does NOT have the Jantar Mantar?

(a) Ujjain
(b) Nagpur
(c) Jaipur
(d) Varanasi

Q85. If θ is an acute angle and tan θ = 48/55, then what is the value of cosec θ ?

(a) 73/55
(b) 55/48
(c) 48/78
(d) 73/48

Q86. Select the term that can replace the question mark (?) in the following series.

AZ, CX, GT, ?

(a) LO
(b) DW
(c) MN
(d) NM

Q87. In certain code language, STAR is coded as 3782 and PLANE is coded as 51894. How will SALE be coded as in that language?

(a) 3418
(b) 3841
(c) 3148
(d) 3814

Q88. P, Q, R, S, T and T and U are sitting in a row facing towards the north (not necessarily in the same order), P sits second to the left of S and third to right of U. Only two persons sit between R and Q. Q is not neighbour of S. Who sits to the immediate left of P ?

(a) S
(b) T
(c) R
(d) Q

Q89. 'Waiter is related to 'Restaurant' in the same way as 'Worker' is related to '_____'.

(a) Shop
(b) House
(c) Factory
(d) School

Q90. Select the option which is true regarding the following two statements labelled Assertion (A) and Reason (R).

A. Some people have darker skin colour.

R. Some people have blood of darker colour.

(a) Both 'A' and 'R' are true and 'R' is the correct explanation of 'A'.
(b) Both 'A' and 'R' are true but 'R' is not the correct explanation of 'A'.
(c) Both 'A' and 'R' are false.
(d) 'A' is true but 'R' is false'.

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Q91. If Mohit is the father-in-law of Rani's mother, then how Mohit be related to Rani?

(a) Father's Father
(b) Father
(c) Father's Brother
(d) Mother's Father

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

848, 969, ?, 1282, 1478

(a) 1013
(b) 1113
(c) 999
(d) 1000

Q93. Select the alphanumeric term that can replace the question mark (?) in the following series.

Z63C, X31F. V15I, T7L, R3O, ?

(a) Q1R
(b) P1S
(c) Q2R
(d) P1R

Q94. Select an option which is true regarding the following two statements labelled Assertion (A) and Reason (R).

A. A satellite is not a planet.

R. Planets do not revolve around other planets.

(a) Both 'A' and 'R' are false.
(b) Both 'A' and 'R' are true but 'R' is not the correct explanation of 'A'
(c) Both 'A' and 'R' are true and 'R' is the correct explanation of 'A'.
(d) 'A' is true but 'R' is false.

Q95. Read the given information carefully and answer the question that follows.

There are five girls A, B, C, D and E. They are married to boys from five different states Uttar Pradesh, Madhya Pradesh. Jharkhand, Bihar and Odisha, but not necessarily in the same order. All the boys are in five different professions Politician, Professor, Teacher, Doctor and Engineer, but not necessarily in the same order.

D is married to a doctor, B is married to a man from Uttar Pradesh, who is not a professor or politician. E is married to an engineer and he is not from Jharkhand or Madhya Pradesh. C is married to a person who is from Bihar. The politician is not from Bihar or Jharkhand.

A is married to a person from-

(a) Jharkhand
(b) Odisha
(c) Bihar
(d) Madhya Pradesh

Q96. Anushka has kept four erasers, some pencils and some sharpeners in the bag. The number of sharpeners is one-fourth of the number of pencils. How many pencils does she many, if the total number of the three items is 49?

(a) 20
(b) 24
(c) 16
(d) 36

Q97. Select the option that is related to the third number in the same way as the second number is related to the first number.

179 : 971 : : 284 : ?

(a) 480
(b) 482
(c) 281

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(d) 842

Q98. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusion logically follow(s) from statements.

Statements:

All horses are donkeys.

All monkeys are donkeys.

Conclusions:

i. Some horses are monkeys

ii. Some monkeys are horses.

(a) Neither i nor ii follows.
(b) Either i or ii follows.
(c) Both i and ii follow.
(d) Only i follows.

Q99. Three of the following four letter-clusters are alike in a certain way and one is different.

Pick the odd letter-cluster out.

(a) EHK
(b) PRT
(c) BDF
(d) GIK

Q100. Select the option that is releted to the third letter-cluster in the same way as the second letter-cluster is related to the first letter-cluster.

LQRT : DIJL :: OYZD : ?

(a) GQRV
(b) HQRA
(c) LUWR
(d) DOPU

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (d) Arteries

The logic followed here is:

Logic: Functional relationship.

Here,

Xylem : Plants → Xylem is a tissue in plants that transports water.

Similarly,

Arteries : Human → Arteries are vessels in humans that transport blood.

Hence, the correct answer is "Option 4".

Q2. Answer: (a) 350

Given:

$x - y = 5$

$xy = 15$

Formula Used:

$x^3 - y^3 = (x - y)(x^2 + xy + y^2)$

Calculation:

$x - y = 5$

$xy = 15$

First, find $x^2 + y^2$:

$x^2 + y^2 = (x - y)^2 + 2xy$

$\Rightarrow x^2 + y^2 = 5^2 + 2 \times 15$

$\Rightarrow x^2 + y^2 = 25 + 30$

$\Rightarrow x^2 + y^2 = 55$

Now, substitute into the formula:

$x^3 - y^3 = (x - y)(x^2 + xy + y^2)$

$\Rightarrow x^3 - y^3 = 5(55 + 15)$

$\Rightarrow x^3 - y^3 = 5 \times 70$

$\Rightarrow x^3 - y^3 = 350$

The value of $x^3 - y^3$ is 350.

Q3. Answer: (c) Monazite

The correct answer is Monazite

Key Points

• Monazite is an important ore of thorium.

• It is a reddish-brown phosphate mineral that contains rare earth metals, including thorium.

• Monazite is primarily found in beach sands in India, Brazil, Australia, and South Africa.

• It is extracted and processed to obtain thorium, which is used as a nuclear fuel and in various industrial applications.

• Thorium extracted from monazite has potential applications in nuclear reactors as a cleaner and safer alternative to uranium.

Additional Information

• Torbernite and Pitchblende are ores of uranium, not thorium.

• Carnotite is also an ore of uranium and vanadium.

• Monazite's thorium content varies, but it can be as high as 12% thorium oxide (ThO2).

• The extraction of thorium from monazite involves several steps, including crushing, grinding, and chemical processing.

• Thorium is being researched as a potential fuel for future nuclear reactors due to its abundance and safety benefits over uranium.

Q4. Answer: (b) The term of a judge in the International Court of Justice (ICJ) is five years.

The correct answer is The term of a judge in the International Court of Justice (ICJ) is five years

Key Points

• The term of a judge in the International Court of Justice (ICJ) is not five years but nine years.

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

• Judges of the ICJ are elected by the United Nations General Assembly and the Security Council.

• The ICJ consists of 15 judges, who are elected to nine-year terms.

Additional Information

• The United Nations has six official languages: Arabic, Chinese, English, French, Russian, and Spanish.

• The United Nations Security Council (UNSC) has five permanent members: China, France, Russia, the United Kingdom, and the United States.

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• The ICJ's role is to settle legal disputes submitted by states and to provide advisory opinions on legal questions referred to it by authorized international organs and agencies.

Q5. Answer: (b) luxury train

The correct answer is luxury train

Key Points

• The Deccan Odyssey is a luxury train that operates in India.

• It offers a unique and opulent travel experience, taking passengers on a journey through various scenic and culturally rich regions of India.

• The train is equipped with modern amenities and provides a royal experience, reminiscent of the grandeur of Indian royalty.

• It includes facilities such as deluxe cabins, restaurants, a spa, and a bar, ensuring a comfortable and luxurious journey for its guests.

Additional Information

• The Deccan Odyssey is often compared to other luxury trains in India, such as the Palace on Wheels and the Maharajas' Express.

• It was launched to promote tourism in the state of Maharashtra and other regions along its route.

• The train covers various tourist destinations, including historical sites, wildlife sanctuaries, and cultural spots.

• Traveling on the Deccan Odyssey provides an opportunity to explore the diverse heritage and natural beauty of India in a lavish setting.

Q6. Answer: (c) meteorological

The correct answer is meteorological

Key Points

• Kalpana-1 is a meteorological satellite launched by the Indian Space Research Organisation (ISRO).

• It was originally named METSAT-1 and was later renamed to honor Kalpana Chawla, the first woman of Indian origin in space.

• The satellite was launched on September 12, 2002.

• Kalpana-1 is primarily used for weather forecasting, monitoring, and data collection for meteorological purposes.

• It plays a crucial role in disaster management and in providing accurate weather reports.

Additional Information

• The satellite operates in the geostationary orbit at a longitude of 74° E.

• Kalpana-1 carries Very High Resolution Radiometer (VHRR) and Data Relay Transponder (DRT) payloads.

• ISRO has launched several other meteorological satellites, including the INSAT series, to enhance weather prediction capabilities.

• These satellites contribute significantly to the study of climate change and environmental monitoring.

Q7. Answer: (d) -196 ^oC

The correct answer is -196 oC

Key Points

• The boiling point of liquid nitrogen is -196 oC.

• Liquid nitrogen is a cryogenic fluid that can cause rapid freezing on contact with living tissue.

• It is commonly used in various industrial and medical applications, including cryopreservation and cryotherapy.

• Due to its extremely low boiling point, it must be stored in specialized insulated containers to prevent rapid evaporation.

Additional Information

• Liquid nitrogen is produced industrially in large quantities by fractional distillation of liquid air.

• It is colorless, odorless, and extremely cold.

• Handling liquid nitrogen requires proper safety precautions to avoid frostbite and other injuries.

• It is also used in the food industry for flash freezing and in scientific research for creating extremely low-temperature environments.

Q8. Answer: (c) 793

The correct answer is 793

Key Points

• The sum of the two smallest natural numbers, each having exactly seven factors, is 793.

• A natural number with exactly seven factors must be of the form p^6, where p is a prime number.

• The smallest primes are 2 and 3.
• Calculating for the smallest primes: 2^6 = 64 and 3^6 = 729.
• Thus, the sum 64 + 729 = 793.
Additional Information
• A number having exactly seven factors is rare and follows a specific mathematical form.
• Understanding the properties of prime numbers and their powers helps in solving such problems efficiently.

Q9. Answer: (a) 375

Given:
Numbers: 15 and 25
Formula Used:
Product of LCM and HCF of two numbers = Product of the numbers
Calculation:
LCM(15, 25) = 75
HCF(15, 25) = 5
Product of LCM and HCF = LCM × HCF
Product of the numbers = 15 × 25
=> Product of LCM and HCF = 75 × 5
=> Product of the numbers = 375
The product of the LCM and the HCF of 15 and 25 is 375.

Q10. Answer: (c) Nathpa Jakri Dam-Jhelum river

The correct answer is Nathpa Jakri Dam-Jhelum river
Key Points
• Nathpa Jakri Dam is built on the Sutlej river, not the Jhelum river.
• The Nagarjuna Sagar Dam is correctly matched with the Krishna river.
• The Tehri Dam is correctly matched with the Bhagirathi river.
• The Indira Sagar Dam is correctly matched with the Narmada river.
• It is important to know the correct pairings of dams and rivers as they are significant for geography and general knowledge.
Additional Information
• The Nathpa Jakri Dam is the largest hydroelectric project in India.
• The Nagarjuna Sagar Dam is one of the world's largest and tallest Masonry dams.
• The Tehri Dam is the tallest dam in India and one of the tallest in the world.
• The Indira Sagar Dam has the largest reservoir in India.

Q11. Answer: (a) 531/3 km/h

Given:
Distance covered at 60 km/h = 75% of total distance
Distance covered at 40 km/h = 25% of total distance
Formula Used:
Average speed = Total distance travelled / Total time taken
Calculation:
Let the total distance be D km.
Distance covered at 60 km/h = 0.75D
Distance covered at 40 km/h = 0.25D
Time taken to cover 0.75D at 60 km/h = 0.75D / 60
Time taken to cover 0.25D at 40 km/h = 0.25D / 40
Total time taken = (0.75D / 60) + (0.25D / 40)
Total time taken = (0.75D)/(60) + (0.25D)/(40)
Total time taken = (0.75D × 2)/(120) + (0.25D × 3)/(120)
Total time taken = (1.5D)/(120) + (0.75D)/(120)
Total time taken = (2.25D)/(120)
Total time taken = D / 53.33

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Average speed = Total distance / Total time
Average speed = D / (D / 53.33)
Average speed = 53.33 km/h
The average speed for the entire journey is 53⅓ km/h.

Q12. Answer: (d) 1

Given:
The equation is $x^3 - 9x^2 + 26x - 24 = 0$.
Options for x: 3, 2, 4, 1
Formula Used:
Substitute each value of x into the equation and check if the equation holds true.
Calculation:
Substitute x = 3:
=> $3^3 - 9 \times 3^2 + 26 \times 3 - 24$
=> 27 - 81 + 78 - 24
=> 0 (Correct solution)
Substitute x = 2:
=> $2^3 - 9 \times 2^2 + 26 \times 2 - 24$
=> 8 - 36 + 52 - 24
=> 0 (Correct solution)
Substitute x = 4:
=> $4^3 - 9 \times 4^2 + 26 \times 4 - 24$
=> 64 - 144 + 104 - 24
=> 0 (Correct solution)
Substitute x = 1:
=> $1^3 - 9 \times 1^2 + 26 \times 1 - 24$
=> 1 - 9 + 26 - 24
=> -6 (Incorrect solution)
The value of x that provides an INCORRECT solution is 1.

Q13. Answer: (a) Physics, Chemistry, Biology

The logic followed here is:

Physics, Chemistry, Biology	Science subject
French, Biochemistry, Economics	Mixed subject
Mathematics, Sociology, English	Mixed subject
Political Science, Sanskrit, Geography	Mixed subject

All the three options except option 1 are subjects of mixed disciplines,
Whereas,
Option 1 (Physics, Chemistry, Biology) are subjects of Science disciplines,
Hence, the correct answer is "Option 1".

Q14. Answer: (c) Sunchi Stupa

The correct answer is Sanchi Stupa.
Key Points
• Rs 200 note
• The motif of the new denomination Rs. 200 is Sanchi Stupa on the reverse and its colour is Bright Yellow.
• The dimension of the banknote is 66 mm*146 mm.
• It is released on 25 August 2017.
• The obverse design is of Mahatma Gandhi.
• The Reserve Bank of India has the sole authority to issue banknotes in India except for the one-rupee note which is released by the Ministry of Finance.

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• The Government of India is the issuing authority of coins and supplies coins to the Reserve Bank on demand.
• Along with new 200 Rs. note Rs. 2000, 500, 200, 100, 50, 20,10 banknotes were also released.
Additional Information

Denomination	Motifs
Rs. 10	Sun Temple of Konark
Rs. 20	Ellora caves
Rs. 50	Hampi with Chariot
Rs. 100	Rani Ki Vav
Rs. 200	Sanchi Stupa
Rs. 500	Red Fort with Indian Flag
Rs. 2000	Mangalayan

Q15. Answer: (a) REXAN

The logic followed here is:
PINTEREST is written LEJPANAOP
Similarly,
'VIBER' will be written as

Hence, "Option 1" is the correct answer.

Q16. Answer: (d) 24153

The correct Dictionary order is:
2. Remark
4. Remote
1. Retail
5. Revoke
3. Reward
So, the correct order are: '2, 4, 1, 5, 3'.
Hence, the correct answer is "Option 4".

Q17. Answer: (d) 24

Given:
The LCM of 6, 9, and x is 72.
Formula Used:
LCM(a, b, c) = LCM(LCM(a, b), c)
LCM of a number is the smallest number that is a multiple of each of the given numbers.
Calculation:
LCM of 6 and 9:
Prime factorization of 6 = 2 × 3
Prime factorization of 9 = 3^2
LCM(6, 9) = 2 × 3^2 = 18
Given LCM(6, 9, x) = 72:
LCM(18, x) = 72
Check each option:
Option 1: x = 12
Prime factorization of 12 = 2^2 × 3
LCM(18, 12) = 2^2 × 3^2 = 36 ≠ 72
Option 2: x = 36
Prime factorization of 36 = 2^2 × 3^2
LCM(18, 36) = 2^2 × 3^2 = 36 ≠ 72

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Option 3: x = 18

Prime factorization of 18 = 2×3^2

LCM(18, 18) = 18 ≠ 72

Option 4: x = 24

Prime factorization of 24 = $2^3 \times 3$

LCM(18, 24) = $2^3 \times 3^2 = 72$

=> x = 24 is correct.

The correct answer is option 4.

Q18. Answer: (a) Japanese

The correct answer is Japanese

Key Points

• The Komagata Maru was a Japanese steamship that was chartered by Indian immigrants in 1914.

• The ship was involved in a significant incident in Canadian history when it was denied entry into Canada, leading to a standoff that highlighted the exclusionary immigration policies of the time.

• The incident is an important event in the history of the Indian independence movement and Canadian immigration history.

• It has been commemorated in various forms, including memorials and historical accounts, recognizing its impact on civil rights and immigration policies.

Additional Information

• The Komagata Maru sailed from Hong Kong to Vancouver, carrying 376 passengers from Punjab, India.

• Upon arrival, Canadian authorities refused to allow the passengers to disembark, citing the Continuous Journey Regulation, which required immigrants to travel directly from their country of origin.

• The ship was eventually forced to return to India, where some of the passengers were met with violence and arrest by British colonial authorities.

• The Komagata Maru incident has been recognized as a symbol of resistance against discriminatory laws and has inspired subsequent generations to fight for equal rights and justice.

Q19. Answer: (a) Maurya Dynasty

The correct answer is Maurya Dynasty

Key Points

• Ashoka the Great belonged to the Maurya Dynasty.

• The Maurya Dynasty was founded by Chandragupta Maurya in 322 BCE.

• Ashoka, one of the most famous emperors of the Maurya Dynasty, ruled from 268 to 232 BCE.

• He is renowned for his role in the spread of Buddhism across Asia after his conversion post the Kalinga War.

• Ashoka's reign marked a significant period of political stability, economic prosperity, and cultural development in ancient India.

Additional Information

• The Maurya Empire was one of the largest empires to rule the Indian subcontinent.

• The capital of the Maurya Empire was Pataliputra, present-day Patna.

• Ashoka's edicts, inscribed on pillars and rocks, are among the earliest written records in Indian history.

• The Maurya Dynasty declined after the death of Ashoka, eventually falling in 185 BCE.

• The Maurya administration was highly centralized, with a complex bureaucracy and a strong military.

Q20. Answer: (d) 112

Given:

The numbers are in the ratio 4 : 3 : 8.

The smallest of these numbers is 42.

Formula Used:

If the ratio of three numbers is a : b : c and the smallest number is k, then the other numbers can be found using:

First Number = (a / b) × k

Second Number = (c / b) × k

Calculation:

Let the smallest number (42) be represented by the ratio part 3.

Largest number is represented by the ratio part 8.

=> Largest Number = (8 / 3) × 42

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=> Largest Number = 8 × 14

=> Largest Number = 112

The largest of these numbers is 112.

Alternate Method Given:-

The numbers are in the ratio 4 : 3 : 8.

3 unit = 42

1 unit = 14

8unit = 14 × 8 = 112

Q21. Answer: (d) Ronald Ross

The correct answer is Ronald Ross

Key Points

• Ronald Ross was awarded the Nobel Prize for his research on the transmission of malaria.

• He discovered that malaria is transmitted by the bites of infected mosquitoes, specifically the Anopheles species.

• This groundbreaking discovery was made in 1897, and it laid the foundation for combating malaria through mosquito control.

• Ross's work has had a lasting impact on public health and the understanding of disease transmission.

Additional Information

• Ronald Ross was born on 13 May 1857 and passed away on 16 September 1932.

• He was a British medical doctor who worked in the Indian Medical Service.

• His discovery was made while he was working in Secunderabad, India.

• In recognition of his work, Ross was awarded the Nobel Prize in Physiology or Medicine in 1902.

• He continued to work on malaria and other tropical diseases throughout his career, contributing significantly to the field of tropical medicine.

• Ronald Ross's legacy continues through the Ross Institute, which focuses on research in tropical diseases.

Q22. Answer: (c) (√(3))/4

Given:

θ = 30^o

Formula Used:

sin θ cos θ

Calculation:

sin 30^o = 1/2

cos 30^o = √3/2

=> sin 30^o cos 30^o = (1/2) × √3/2

=> sin 30^o cos 30^o = √3/4

The value of sin θ cos θ when θ = 30^o is √3/4.

Q23. Answer: (d) W

According to the question:

1) 17th letter from the left => Q

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

2) 6th to the right of the 17th letter from the left => W

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

Thus, 6th to the right of the 17th letter from the left in the English alphabet is 'W'.

Hence, "Option 4" is the correct answer.

Alternate Method1) 17th letter from the left => Q (17)

2) 6th to the right of the 17th letter from the left => Q (17) + 6 => W (23)

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Q24. Answer: (b) 767

The logic followed here is:

Hence, "767" is the correct answer.

Q25. Answer: (d) Sister

Given:

1) Priyanka has only two children, Rani and Aishwarya.

2) Seema is the daughter of Aishwarya.

3) Rani is the mother of a girl named Preeti.

4) Aishwarya is the maternal aunt of a girl named Kajol.

Here, Kajol is the sister of Preeti.

Hence, the correct answer is "Option 4".

Q26. Answer: (c) Punjab is the largest producer of wheat in India.

The correct answer is Punjab is the largest producer of wheat in India.

Key Points

• Uttar Pradesh is the largest producer of sugarcane in India.

• Kerala is the largest producer of rubber in India.

• Madhya Pradesh is the largest producer of wheat in India, not Punjab.

• Assam is the largest producer of tea in India.

Additional Information

• Uttar Pradesh contributes significantly to India's sugarcane production, with favorable climatic conditions and extensive farming practices.

• Kerala has the ideal climate for rubber cultivation, with its warm and humid conditions.

• Madhya Pradesh has emerged as the leading wheat producer, thanks to its large agricultural area and adoption of modern farming techniques.

• Assam is renowned for its tea production, with its tea gardens producing some of the finest teas in the world.

Q27. Answer: (c) 31

Given Equation: 72 + 8 - 3 × 6 ÷ 2

BODMAS Rule:

Decoding the given information:

Symbol	•	•	×	÷
Meaning	division	multiplication	addition	subtraction

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

=> 72 ÷ 8 × 3 + 6 - 2

=> 9 × 3 + 6 - 2

=> 27 + 6 - 2

=> 33 - 2 = 31.

Hence, the correct option is "Option 3".

Q28. Answer: (a) 35

Given:

28% of a number is 20.

Formula Used:

If x is the number, then:

28% of x = 20

49% of x = ?

Calculation:

Let the number be x.

28% of x = 20

=> 0.28 × x = 20

=> x = 20 / 0.28

=> x = 71.43 (approx)

Now, we need to find 49% of x.

49% of x = 0.49 × 71.43

=> 0.49 × 71.43 = 35

The value of 49% of the number is 35.

Alternate Method Given:

28% of a number is 20

100% of number = (20/28) × 100

49% of number is =(20/28) × 100 × (49/100) = 35

Q29. Answer: (d) E

Given:

Five friends A, B, C, D and E live in a society.

All of them like the cars Brand P, Brand Q, Brand R, Brand S and Brand T, of a particular colour, blue, grey, white, silver and black.

1) C likes blue Brand R.

2) B likes white car.

Friends	Car brand	Car color
A		
B		White
C	Brand R	Blue
D		
E		

3) A likes black car but not Brand T.

4) D does not like silver car. He prefers Brand S.

5) E does not like Brand R and Brand T

6) One of them likes Silver Brand Q

As both E and A do not like Brand T, therefore the only person left who likes Brand T is 'B'.

As D does not like silver car, therefore the only person left who likes silver car is 'E'.

As it is given that one who like the silver car also like Brand Q, therefore E like Brand Q.

After assigning all the brands and colors only brands and color left is Brand P and Grey.

Friends	Car brand	Car color
A	Brand P	Black
B	Brand T	White
C	Brand R	Blue
D	Brand S	Grey
E	Brand Q	Silver

Thus, according to the final arrangement E like Brand Q.

Hence, "Option 4" is the correct answer.

Q30. Answer: (c) Jitu Rai

The correct answer is Jitu Rai

Key Points

• Jitu Rai is an accomplished Indian shooter but has not won an Olympic medal.

• Rajyavardhan Singh Rathore won a silver medal in Men's Double Trap at the 2004 Athens Olympics.

• Vijay Kumar secured a silver medal in Men's 25m Rapid Fire Pistol at the 2012 London Olympics.

• Gagan Narang earned a bronze medal in Men's 10m Air Rifle at the 2012 London Olympics.

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Additional Information

• Shooting is one of the sports where India has won multiple Olympic medals.

• India's shooting contingent has produced several world-class shooters who have excelled in various international competitions, including the Olympics.

• Despite his achievements in other competitions, Jitu Rai has not yet secured an Olympic medal, making him the correct answer to the question.

Q31. Answer: (d) T4S

The logic followed here is:

Hence, "Option 4" is the correct answer.

Q32. Answer: (d) 30

Given:

Average of 6 integers = 45

Difference between the largest and smallest number = 18

Formula Used:

Sum of the numbers = Average × Number of integers

Calculation:

Sum of the 6 integers = 45 × 6

=> Sum = 270

Let the smallest integer be x.

Then, the largest integer = x + 18

Let the other 4 integers be a, b, c, and d.

So, the sum of all integers = x + (x + 18) + a + b + c + d = 270

=> 2x + 18 + a + b + c + d = 270

=> 2x + a + b + c + d = 252

To minimize x, maximize the sum of a, b, c, and d.

Since they are integers, we can assume the maximum possible values for a, b, c, and d.

Let's assume a = b = c = d = 63/4 (since the average of a, b, c, and d should be 63/4)

But since they must be integers, let's distribute the values around 63/4, i.e., 15 or 16.

If a = b = c = 15 and d = 17:

Sum of a, b, c, and d = 15 + 15 + 15 + 17 = 62

=> 2x + 62 = 252

=> 2x = 190

=> x = 95

However, this is not minimizing x. Let's adjust to find the minimum integer sum:

If a = b = c = 16 and d = 14:

Sum of a, b, c, and d = 16 + 16 + 16 + 14 = 62

=> 2x + 62 = 252

=> 2x = 190

=> x = 95

Therefore, the minimum value possible for the smallest of these 6 integers is 30.

Q33. Answer: (a) Rs. 1,500.00

Given:

Compound interest rate = 10% per annum

Amount after 2 years = Rs. 1815

Formula Used:

Compound Interest Formula: $A = P(1 + (r)/(100))^n$

Where:

A = Amount after n years

P = Principal amount (initial sum)

r = Rate of interest per annum

n = Number of years

Calculation:

Given A = Rs. 1815, r = 10%, n = 2

Using the formula: $A = P(1 + (r)/(100))^n$

=> $1815 = P(1 + (10)/(100))^2$

=> $1815 = P(1 + 0.10)^2$

=> $1815 = P(1.10)^2$

=> $1815 = P \times 1.21$

=> $P = (1815)/(1.21)$

=> $P = 1500$

The original sum that was invested is Rs. 1500.

Q34. Answer: (d) 9 : 4

Given:

36% of x = 81% of y

Formula Used:

x : y

Calculation:

36% of x = 81% of y

0.36x = 0.81y

=> x / y = 0.81 / 0.36

=> x / y = 81 / 36

=> x / y = 9 / 4

The ratio x : y is 9 : 4

Q35. Answer: (c) Delhi to Chennai

The correct answer is Delhi to Chennai

Key Points

• National Highway 48 (NH48) extends from Delhi to Chennai.

• It is one of the major highways in India, covering a vast distance and connecting important cities.

• NH48 is part of the Golden Quadrilateral project, which aims to connect the four major metro cities of India.

• This highway plays a crucial role in facilitating trade, commerce, and travel between the northern and southern parts of India.

Additional Information

• The Golden Quadrilateral project was initiated by the Government of India to improve the road infrastructure and enhance connectivity.

• NH48 passes through several states, including Haryana, Rajasthan, Gujarat, Maharashtra, Karnataka, and Tamil Nadu.

• The highway supports a high volume of traffic and is crucial for the movement of goods and passengers.

• It also connects various industrial and economic hubs, contributing significantly to the country's economy.

Q36. Answer: (b) 0.361

Given:

19 × 19 = 361

Formula Used:

To find the value of 190 × 0.0019, we use basic multiplication.

Calculation:

190 × 0.0019

=> 190 × (19 / 10000)

=> (190 × 19) / 10000

=> 3610 / 10000

=> 0.361

The value of 190 × 0.0019 is 0.361.

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Q37. Answer: (c) Walk

The logic followed here is:

Logic: Action associated with animals.

Here,

Beetles : Crawl → Crawl is an action associated with Beetles.

Similarly,

Cows : Walk → Walk is an action associated with Cows.

Hence, the correct answer is "Option 3".

Q38. Answer: (a) 1000 kg of carbon dioxide

The correct answer is 1000 kg of carbon dioxide

Key Points

• One carbon credit is equivalent to the reduction or removal of 1000 kg of carbon dioxide from the atmosphere.

• Carbon credits are part of international attempts to mitigate the growth in concentrations of greenhouse gases (GHGs).

• They provide a way to reduce greenhouse gas emissions on an industrial scale by capping total annual emissions and letting the market assign a monetary value to any shortfall through trading.

• Organizations or countries with higher emissions can purchase carbon credits to comply with the emission limits set by regulatory bodies.

• This system incentivizes the reduction of carbon emissions and promotes the use of cleaner technologies.

Additional Information

• Carbon credits are often traded in carbon markets, which can be either compliance markets or voluntary markets.

• Compliance markets are created and regulated by mandatory national, regional, or international carbon reduction regimes.

• Voluntary markets, on the other hand, allow entities to purchase carbon credits on a voluntary basis to offset their own emissions.

• The concept of carbon credits originated from the Kyoto Protocol, an international treaty that commits its parties by setting internationally binding emission reduction targets.

Q39. Answer: (a) Kapurthala

The correct answer is Kapurthala

Key Points

• Kapurthala is the city in Punjab where the Rail Coach Factory (RFC) is located.

• The Rail Coach Factory in Kapurthala is one of the largest coach manufacturing facilities in India.

• It was established in 1986 and has been pivotal in manufacturing railway coaches for the Indian Railways.

• The factory produces various types of coaches including AC coaches, non-AC coaches, and special coaches.

Additional Information

• Rail Coach Factory (RCF) has been instrumental in modernizing the Indian Railways' fleet.

• RCF Kapurthala has also been involved in the production of Linke Hofmann Busch (LHB) coaches, which are known for their enhanced safety and comfort features.

• The factory has contributed significantly to the Make in India initiative by manufacturing high-quality railway coaches domestically.

Q40. Answer: (c) Bhisham sahani

The correct answer is Bhisham Sahani

Key Points

• Bhisham Sahani is the author of the novel 'Tamas'.

• 'Tamas' is a Hindi novel that depicts the horrors of the partition of India.

• Bhisham Sahani was an eminent Hindi writer, playwright, and actor, known for his contributions to Indian literature.

• The novel 'Tamas' won the Sahitya Akademi Award in 1975.

• It has been translated into several languages and adapted into a television series directed by Govind Nihalani.

Additional Information

• Bhisham Sahani was born on 8th August 1915 and passed away on 11th July 2003.

• He was a recipient of the Padma Bhushan in 1998 for his contribution to literature and arts.

• Besides 'Tamas', his other notable works include 'Madhavi', 'Basanti', and 'Katha-Ratnawali'.

• Sahani was also involved in the Indian People's Theatre Association (IPTA) and contributed significantly to Hindi theatre.

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• His works often explore themes of social justice, human rights, and the plight of the common man.

Q41. Answer: (d) Brass

The correct answer is Brass

Key Points

• Brass is an alloy that primarily consists of copper and zinc.

• Unlike Gun metal, Bronze, and Bell metal, which contain tin as a significant component, brass does not contain tin.

• Gun metal is an alloy of copper, tin, and zinc.

• Bronze is primarily an alloy of copper and tin.

• Bell metal is a type of bronze with a higher tin content.

Additional Information

• Brass is widely used for decorative purposes due to its bright gold-like appearance.

• It is also used in applications where low friction is required, such as locks, gears, bearings, doorknobs, and ammunition casings.

• The absence of tin in brass differentiates it from other similar copper alloys that do include tin.

Q42. Answer: (a) 72^(nd) amendment - to make provisions for setting up Rent Control Tribunals

The correct answer is 72nd amendment - to make provisions for setting up Rent Control Tribunals

Key Points

• The 72nd amendment of the Constitution of India was related to the reservation of seats for Scheduled Tribes in the Legislative Assemblies of the States of Tripura, Meghalaya, Mizoram, and Nagaland.

• The 101st amendment introduced the Goods and Services Tax (GST) in India.

• The 61st amendment reduced the voting age from 21 to 18 years.

• The 102nd amendment gave constitutional status to the National Commission for Backward Classes.

Additional Information

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

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

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

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

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

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

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

Q43. Answer: (c) (√(5))/2

Given:

$\sin\theta - \cos\theta = \sqrt{3}/2$

Formula used:

$(\sin\theta - \cos\theta)^2 = (\sqrt{3}/2)^2$

Calculations:

1. Square both sides:

$(\sin\theta - \cos\theta)^2 = (\sqrt{3}/2)^2$

$\Rightarrow \sin^2\theta - 2\sin\theta\cos\theta + \cos^2\theta = 3/4$

2. Use the Pythagorean identity $\sin^2\theta + \cos^2\theta = 1$:

$1 - 2\sin\theta\cos\theta = 3/4$

3. Solve for $\sin\theta\cos\theta$:

$\Rightarrow 2\sin\theta\cos\theta = 1 - 3/4$

$\Rightarrow 2\sin\theta\cos\theta = 1/4$

$\Rightarrow \sin\theta\cos\theta = 1/8$

4. Find $\sin\theta + \cos\theta$:

$(\sin\theta + \cos\theta)^2 = \sin^2\theta + \cos^2\theta + 2\sin\theta\cos\theta$

$\Rightarrow (\sin\theta + \cos\theta)^2 = 1 + 2(1/8)$

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

=> $(\sin \theta + \cos \theta)^2 = 5 / 4$

=> $\sin \theta + \cos \theta = \sqrt{(5 / 4)}$

=> $\sin \theta + \cos \theta = \sqrt{5} / 2$

Therefore The positive value of $\sin \theta + \cos \theta$ is $\sqrt{5} / 2$.

Q44. Answer: (b) Charak was the personal physician of Gautam Buddha.

The correct answer is Charak was the personal physician of Gautam Buddha.

Key Points

• Buddhist scriptures were written in Pali which is historically accurate as Pali was the language used in many ancient Buddhist texts.

• Charak was the personal physician of Gautam Buddha is incorrect as Charak was a renowned ancient Indian physician, but there is no historical evidence to support that he was the personal physician of Gautam Buddha.

• Upagupta influenced Ashoka to embrace Buddhism, which is a well-documented historical fact.

• The birth place of Gautam Buddha is in Nepal, specifically in Lumbini, which is a UNESCO World Heritage Site in Nepal.

Additional Information

• Charak is a figure associated with ancient Indian medicine, particularly known for his work, the Charaka Samhita, which is a foundational text of Ayurveda.

• The Buddhist scriptures written in Pali include the Tipitaka, also known as the Pali Canon, which is the doctrinal foundation of Theravada Buddhism.

• Upagupta is traditionally considered to be the spiritual teacher of Emperor Ashoka and played a significant role in Ashoka's conversion to Buddhism.

• Lumbini is recognized as the birthplace of Gautam Buddha and holds significant historical and religious importance.

Q45. Answer: (b) Song

The logic followed here is:

Logic: Relationship between creator and consumer of a creation.

Here,

Story : Reader → Story is a creation consumed by a Reader.

Similarly,

Song : Listener → Song is a creation consumed by a Listener.

Hence, the correct answer is "Option 2".

Q46. Answer: (d) Fly : Swim

The logic followed here is:

Show	Hide
Motion	Rest
Live	Die
Fly	Swim

Show, Motion, Live are all pairs of opposites (antonyms),

Whereas,

Fly and Swim are not opposites but different modes of movement.

Hence, the correct answer is "Fly : Swim".

Q47. Answer: (a) Select all text in the file

The correct answer is Select all text in the file

Key Points

• Pressing Ctrl + A in MS Word selects all the text in the file.

• This shortcut is useful for quickly highlighting all the content, allowing for further actions like copying, cutting, or formatting.

• It is a common keyboard shortcut across many text editing and word processing applications.

• Using keyboard shortcuts can significantly increase efficiency and streamline workflow in document editing.

Additional Information

• Ctrl + C is used to copy the selected text or item.
• Ctrl + V is used to paste the copied or cut text or item.
• Ctrl + W is used to close the current window or document.
• Keyboard shortcuts are consistent across many software applications, making them a valuable tool for users to learn.
• These shortcuts not only apply to text but also to other elements like images, tables, and more within the document.

Q48. Answer: (a) bamboo

The correct answer is bamboo

Key Points

• Bamboo is the primary diet of the Red Panda.
• Red Pandas are native to the eastern Himalayas and southwestern China.
• They are classified as endangered due to habitat loss and fragmentation.
• Besides bamboo, Red Pandas may also eat fruits, acorns, roots, and eggs.
• Conservation efforts are crucial to protect the Red Panda's natural habitat.

Additional Information

• The Red Panda is also known as the lesser panda, the red bear-cat, and the red cat-bear.
• They have a specialized wrist bone that acts as a thumb, helping them grasp bamboo stalks.
• Red Pandas are solitary creatures and are most active during the dawn and dusk hours.
• They have a lifespan of about 8-10 years in the wild and up to 15 years in captivity.
• International organizations like the World Wildlife Fund (WWF) are actively involved in Red Panda conservation.

Q49. Answer: (c) Rs. 3,840

Given:

Initial duration of stay = 16 days

Extended duration of stay = 8 days

Reduction in average daily allowance = Rs. 80

Formula Used:

Initial total money sanctioned = (Initial average daily allowance) × (Initial duration of stay)

New average daily allowance = (Initial total money sanctioned) / (Total duration of stay after extension)

Calculation:

Let the initial average daily allowance be x Rs.

Initial total money sanctioned = 16x

Total duration of stay after extension = 16 + 8 = 24 days

New average daily allowance = (16x) / 24

Given that the new average daily allowance is Rs. 80 less than the initial average daily allowance:

(16x) / 24 = x - 80

=> (2x) / 3 = x - 80

=> 2x = 3(x - 80)

=> 2x = 3x - 240

=> 3x - 2x = 240

=> x = 240

Initial average daily allowance x = Rs. 240

Initial total money sanctioned = 16x

=> 16 × 240

=> 3840

The initial amount sanctioned to Sonal was Rs. 3,840.

Q50. Answer: (c) 34

Shortcut Trick

Sum of three numbers = 28 × 3 = 84.

Given median b = a + 16. For least value of c, we must maximize a and b.

Constraint: b ≤ c => a + 16 ≤ 84 − (a + b) => a + 16 ≤ 84 − (2a + 16).

3a ≤ 52 => Max integer a = 17.

Min c = 84 − (17 + 33) = 34.
Therefore The correct answer is 34.
Alternate Method
Given: Average of a, b, c = 28; Condition: a ≤ b ≤ c; Median b = a + 16.
Formula: Sum = Average × Total terms
=> a + b + c = 28 × 3 = 84
=> a + (a + 16) + c = 84
=> 2a + c = 84 − 16 = 68
=> c = 68 − 2a
=> Since a ≤ b ≤ c, then b ≤ c
=> a + 16 ≤ 68 − 2a
=> 3a ≤ 52
=> a ≤ 17.33
=> For least value of c, we take the maximum integer value of a, which is 17.
=> c = 68 − 2(17) = 68 − 34 = 34.
Therefore The correct answer is 34.
Additional Information
Properties of Median
In a sorted set of n numbers, if n is odd, the median is the middle term. If n is even, it is the average of the two middle terms.
Average and Sum Relation
Sum of observations = Average × Number of observations. This is the fundamental base for solving DI and word problems.
Minimization Logic
To minimize one variable in a fixed sum equation, you must maximize the other variables while respecting all given constraints.

Q51. Answer: (a) Capital of Mizoram is Kohima.

The correct answer is Capital of Mizoram is Kohima
Key Points
• Capital of Mizoram is not Kohima; it is Aizawl. Kohima is the capital of Nagaland.
• Rajasthan is indeed the largest Indian state by area.
• Sikkim is the least populous state in India.
• The state of Telangana was formed on 2 June 2014.
Additional Information
• Mizoram is a state in Northeast India, with Aizawl as its capital city.
• Rajasthan covers an area of 342,239 square kilometers, making it the largest state in India by area.
• Sikkim has the smallest population among Indian states, with a population of around 610,000 as per the 2011 Census.
• Telangana was carved out of Andhra Pradesh and officially became the 29th state of India on 2 June 2014.

Q52. Answer: (b) 25 : 17

Given:
Successive discounts = 15% and 12%
Profit on sale = 10%
Formula Used:
Let the marked price be M and the cost price be C.
Successive discounts formula: Effective Discount = 1 - (1 - d1) × (1 - d2)
Profit formula: Selling Price = C × (1 + Profit Percentage)
Discounted price formula: Discounted Price = M × (1 - Effective Discount)
Calculation:
Effective Discount:
=> Effective Discount = 1 - (1 - 0.15) × (1 - 0.12)
=> Effective Discount = 1 - (0.85 × 0.88)
=> Effective Discount = 1 - 0.748
=> Effective Discount = 0.252 or 25.2%

Selling Price:

=> Selling Price = C × 1.10

Discounted Price:

=> Discounted Price = M × (1 - 0.252)

=> Discounted Price = M × 0.748

Equating Selling Price and Discounted Price:

=> C × 1.10 = M × 0.748

=> M/C = 1.10/0.748

=> M/C = 110/74.8

=> M/C = 110/74.8 × 10/10

=> M/C = 1100/748

=> M/C = (1100 ÷ 2)/(748 ÷ 2)

=> M/C = 550/374

=> M/C = (550 ÷ 2)/(374 ÷ 2)

=> M/C = 275/187

=> M/C = 275/187

Thus, the ratio of the marked price to the cost price is 25 : 17

The correct answer is option 2.

Q53. Answer: (d) Mohammed Iqbal

The correct answer is Mohammed Iqbal

Key Points

• Mohammed Iqbal once remarked, "Nehru is a patriot, while Jinnah is a politician".

• Mohammed Iqbal was a prominent philosopher, poet, and politician in British India who is widely regarded as having inspired the Pakistan Movement.

• He is best known for his poetic works, including the Tarana-e-Milli and Asrar-e-Khudi, and for his vision of a separate Muslim state.

• Iqbal's statement reflects his views on the contrasting political approaches of Jawaharlal Nehru and Muhammad Ali Jinnah.

Additional Information

• Jawaharlal Nehru was a central figure in Indian politics before and after independence and the first Prime Minister of India.

• Muhammad Ali Jinnah was a lawyer, politician, and the founder of Pakistan, serving as its first Governor-General until his death.

• The differing ideologies of Nehru and Jinnah played a significant role in the partition of India and the creation of Pakistan in 1947.

• Iqbal's statement underscores the differing motivations and methods of these two key figures in the Indian subcontinent's struggle for independence.

Q54. Answer: (b) Jugnu

The correct answer is Jugnu

Key Points

• Jugnu was a satellite operated by the Indian Institute of Technology Kanpur.

• It was a nano-satellite developed by the students and faculty of IIT Kanpur.

• The satellite was launched by the Indian Space Research Organisation (ISRO) on October 12, 2011.

• Jugnu was designed to demonstrate technologies for imaging and data transmission.

• The satellite's mission was to collect data related to agriculture and disaster monitoring.

Additional Information

• The Indian Institute of Technology Kanpur (IIT Kanpur) is one of the premier institutions in India, known for its engineering and technological research and education.

• ISRO frequently collaborates with educational institutions to foster innovation and research in space technology.

• Jugnu was part of ISRO's initiative to encourage academic institutions to participate in space missions and satellite development.

• Such collaborations help in building the technical skills and research capabilities of students, preparing them for future challenges in space technology.

Q55. Answer: (c) 1/12

Given:

Fractions: 2/3, 3/4 and 5/6

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Formula Used

To find the HCF of fractions, use: HCF of Numerators / LCM of Denominators

Calculation:

Numerators: 2, 3, 5

Denominators: 3, 4, 6

HCF of numerators (2, 3, 5) = 1

LCM of denominators (3, 4, 6):

Prime factorization:

3 = 3

4 = 2^2

6 = 2 × 3

LCM = 2^2 × 3 = 4 × 3 = 12

HCF of fractions = HCF of Numerators / LCM of Denominators

=> HCF = 1/12

The correct answer is option 3: 1/12.

Q56. Answer: (b) Central Arid Zone Research Institute - Jodhapur

The correct answer is Central Arid Zone Research Institute - Jodhapur

Key Points

• Central Arid Zone Research Institute - Jodhpur is correctly matched.

• The Central Arid Zone Research Institute (CAZRI) is located in Jodhpur, Rajasthan, and focuses on research related to arid zones.

Additional Information

• The Central Leather Research Institute is located in Chennai, not Salem.

• The Central Potato Research Institute is located in Shimla, not Dehradun.

• The Central Drug Research Institute is located in Lucknow, not Kanpur.

Q57. Answer: (b) 868

Then logic followed here is:

Logic: (1st digit)^2 = 2nd & 3rd digit

Option 1) 981 → 9^2 = 81

Option 2) 868 → 82 = 64 ≠ 68.

Option 3) 636 → 62 = 36

Option 4) 749 → 72 = 49

So, 868 is different among them.

Hence, the correct answer is "Option 2".

Q58. Answer: (d) 257

Given:

We need to find the square root of 66049.

Formula Used:

Square Root Formula: If x is a non-negative real number, then the square root of xx is a number yy such that $y^2 = x$

Calculation:

Let y be the square root of 66049.

So, y^2 = 66049

We need to find y such that y^2 = 66049

=> y = √(66049)

We can check the provided options:

Option 1: 267^2 = 71289 (not equal to 66049)

Option 2: 263^2 = 69169 (not equal to 66049)

Option 3: 253^2 = 64009 (not equal to 66049)

Option 4: 257^2 = 66049 (equal to 66049)

Thus, the correct option is 257.

The square root of 66049 is 257.

Q59. Answer: (c) INS Arihant

The correct answer is INS Arihant

Key Points

• INS Arihant is India's first indigenously developed nuclear-powered submarine.

• The submarine is part of the Indian Navy's Advanced Technology Vessel (ATV) project.

• It was launched on 26 July 2009 and commissioned into service in August 2016.

• INS Arihant provides India with a credible second-strike capability, enhancing the country's strategic deterrence.

• The submarine is equipped with nuclear-tipped ballistic missiles, making it a crucial asset in India's defense strategy.

Additional Information

• INS Shalki, INS Sindhuvir, and INS Kalvari are other submarines in the Indian Navy but are not nuclear-powered.

• INS Shalki is a diesel-electric submarine of the Shishumar class.

• INS Sindhuvir is a Kilo-class diesel-electric submarine.

• INS Kalvari is a Scorpene-class diesel-electric submarine.

• Nuclear-powered submarines have a significant strategic advantage due to their ability to remain submerged for extended periods without surfacing.

• They play a critical role in maintaining stealth and ensuring the effectiveness of a nation's naval deterrent capabilities.

Q60. Answer: (d) 2,4-D

The correct answer is 2,4-D

Key Points

• 2,4-D is a widely used herbicide.

• It is used to control broadleaf weeds in agriculture, turf, and non-crop areas.

• 2,4-D is one of the oldest herbicides and has been in use since the 1940s.

• It works by mimicking the plant hormone auxin, causing uncontrolled growth and ultimately the death of the plant.

Additional Information

• Aldrin, DDT, and BHC are all insecticides and are not used as herbicides.

• Aldrin is used to control soil pests.

• DDT is famous for its use in controlling mosquitoes and other insects but is banned in many countries due to its environmental impact.

• BHC (Benzene Hexachloride) is used to control a wide range of pests.

• Herbicides like 2,4-D are crucial in agricultural practices to ensure the control of unwanted vegetation that competes with crops for nutrients and resources.

Q61. Answer: (a) 0

Given: Unit place digit of 124n + 124(n+1)

Calculation:

Focus on the units digit of 124, which is 4. We need to examine the units digits of the powers of 4:

• $4^1 = 4$ (units digit: 4)

• $4^2 = 16$ (units digit: 6)

• $4^3 = 64$ (units digit: 4)

• 4^4 = 256 (units digit: 6)

• The units digit of 4^n cycles every two numbers: 4, 6.

Compute the units digit of 124^n + 124^((n+1)):

• If n is odd: 124^n has a units digit of 4, and 124^((n+1)) has a units digit of 6. Sum of units digits: 4 + 6 = 10. The units digit is 0.

• If n is even: 124^n has a units digit of 6, and 124^((n+1)) has a units digit of 4. Sum of units digits: 6 + 4 = 10. The units digit is 0.

The digit in the unit's place of 124^n + 124^((n+1)) is 0.

Q62. Answer: (a) Bombay

The correct answer is Bombay

Key Points

• The Quit India Movement was launched at the Bombay session of the All India Congress Committee.

• Also known as the August Movement, it was initiated on 8th August 1942 during World War II.

• The movement was a call for the immediate end of British rule in India and was led by Mahatma Gandhi.

• Gandhi's speech, delivered at the Gowalia Tank Maidan in Bombay, called for "Do or Die" in the fight for freedom.

• The British government responded to the movement with mass detentions and repression, but it marked a significant escalation in the Indian independence struggle.

Additional Information

• The Quit India Movement was a crucial turning point in the Indian independence movement, significantly weakening British authority.

• Despite the crackdown by British authorities, the movement kept the spirit of resistance alive and inspired future generations to continue the struggle for independence.

• The movement also demonstrated the unity and resolve of the Indian people against colonial rule, setting the stage for India's eventual independence in 1947.

Q63. Answer: (b) Santosh Trophy

The correct answer is Santosh Trophy

Key Points

• Santosh Trophy is a football competition in India.

• It is an annual Indian football tournament which is contested by states and government institutions.

• The tournament is named after the late Maharaja Sir Manmatha Nath Roy Chowdhary of Santosh (now in Bangladesh).

• The competition was started in 1941 and is one of the oldest football tournaments in India.

• It is organized by the All India Football Federation (AIFF).

Additional Information

• The Irani Cup, Duleep Trophy, and Deodhar Trophy are all associated with cricket.

• The Santosh Trophy was named in honor of Sir Manmatha Nath Roy Chowdhary of Santosh, who was the President of the Indian Football Association.

• The tournament provides an opportunity for young and emerging footballers to showcase their talent.

Q64. Answer: (a) Only i follows.

The least possible Venn diagram for the given statements is as shown below :

Conclusions:

I. X is not an elephant → Follow (As X is a star and no star is an elephant. As whole X comes in the star which can not be the elephant, therefore X is not an elephant is true.)

II. X may be an elephant → Does not follow (As X is a star and no star is an elephant. As whole X comes in the star which can not be the elephant, therefore X may be an elephant is false.)

Therefore Here, Only conclusion I follow.

Hence, the correct answer is "Option 1"

Q65. Answer: (c) Narora Atomic Power Station is in Uttar Pradesh.

The correct answer is Narora Atomic Power Station is in Uttar Pradesh

Key Points

• Narora Atomic Power Station is located in the state of Uttar Pradesh.

• It is one of the important nuclear power plants in India, contributing to the generation of nuclear energy.

• The plant is operated by the Nuclear Power Corporation of India Ltd (NPCIL).

• It plays a significant role in meeting the energy requirements of the northern region of India.

Additional Information

• Kudankulam Nuclear Power Station is actually located in Tamil Nadu, not Kerala.

• Mundra Thermal Power Station is situated in Gujarat, not Madhya Pradesh.

• Talcher Super Thermal Power Station is located in Odisha, not Andhra Pradesh.

• The correct identification of the location of these power stations is crucial for general knowledge and competitive exams.

Q66. Answer: (b) 8

Given:

Amount after 6 years = Rs. 2,368

Amount after 11 years = Rs. 3,008

Formula Used:

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Simple Interest (SI) = Principal (P) × Rate (R) × Time (T) / 100
Amount (A) = Principal (P) + Simple Interest (SI)
Calculation:
Let Principal be P and Rate be x%.
From the given data:
P + (P × x × 6) / 100 = 2368.....(1)
P + (P × x × 11) / 100 = 3008.....(2)
Subtracting the first equation from the second:
(P + (P × x × 11) / 100) - (P + (P × x × 6) / 100) = 3008 - 2368
=> (P × x × 11) / 100 - (P × x × 6) / 100 = 640
=> P × x × (11 - 6) / 100 = 640
=> P × x × 5 / 100 = 640
=> P × x = 640 × 100 / 5
=> P × x = 12800
From the first equation:
P + (P × x × 6) / 100 = 2368
=> P + 768 = 2368
=> P = 2368 - 768
=> P = 1600
Now, substitute P in P × x = 12800:
1600 × x = 12800
=> x = 12800 / 1600
=> x = 8
The value of x is 8%.

Q67. Answer: (c) 243 cm2

Shortcut Trick
In a right isosceles triangle, the relationship between Area and hypotenuse (h) is given by:
Area = $h^2 \div 4$
Area = $(18\sqrt{3})^2 \div 4 = (324 \times 3) \div 4$
Area = $81 \times 3 = 243$ cm²
Therefore The correct answer is 243 cm².
Alternate Method
Given: Hypotenuse of the right isosceles triangle = $18\sqrt{3}$ cm.
Formula Used: Area = 1/2 × base × height; Pythagoras Theorem: $a^2 + b^2 = c^2$.
=> Let the equal sides (base and height) of the triangle be a.
=> Using Pythagoras theorem: $a^2 + a^2 = (18\sqrt{3})^2$
=> $2a^2 = 324 \times 3$
=> $2a^2 = 972$
=> $a^2 = 486$
=> Area of the triangle = 1/2 × base × height = 1/2 × a × a
=> Area = $1/2 \times a^2$
=> Area = $1/2 \times 486 = 243$ cm²
Thus, the area of the triangle is 243 cm², which corresponds to option (3).
Therefore The correct answer is 243 cm².
Additional Information
Right Isosceles Triangle Properties
It has one 90° angle and two 45° angles. The two sides forming the right angle are equal in length.
Side-Hypotenuse Relationship
In a right isosceles triangle with side 'a', the hypotenuse is always $a\sqrt{2}$.
Pythagoras Theorem
For any right-angled triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides ($h^2 = p^2 + b^2$).

General Area of Triangle

The basic formula for the area of any triangle is 1/2 × base × height.

Q68. Answer: (c) 25

Given:

Expression: 125 ÷ 5 ÷ 5 × 5

Formula Used:

Order of Operations (BODMAS/BIDMAS): Brackets, Orders (i.e. powers and square roots, etc.), Division and Multiplication (from left to right), Addition and Subtraction (from left to right)

Calculation:

First, perform the division operations from left to right.

=> 125 ÷ 5 = 25

=> 25 ÷ 5 = 5

Now, perform the multiplication operation.

=> 5 × 5 = 25

The simplified value of the expression is 25.

Q69. Answer: (a) Rs. 850

Given:

The difference between selling at 11% profit and 13% loss = Rs. 204

Formula Used:

Selling Price (SP) = Cost Price (CP) × (1 + Profit%)

Selling Price (SP) = Cost Price (CP) × (1 - Loss%)

Calculation:

Let the Cost Price (CP) be Rs. x.

Selling Price at 11% profit = x × 1.11

Selling Price at 13% loss = x × 0.87

Given that the difference between these two selling prices is Rs. 204:

x × 1.11 - x × 0.87 = 204

=> x (1.11 - 0.87) = 204

=> x × 0.24 = 204

=> x = 204 / 0.24

=> x = 850

The cost price of the item is Rs. 850.

Q70. Answer: (a) Paradip Port - Puducherry

The correct answer is Paradip Port - Puducherry

Key Points

• Paradip Port is located in Odisha, not Puducherry.

• Tuticorin Port is correctly matched with Tamil Nadu.

• Mormugao Port is correctly matched with Goa.

• Kandla Port is correctly matched with Gujarat.

Additional Information

• Paradip Port is one of the major ports on the East Coast of India.

• Tuticorin Port, also known as V.O. Chidambaranar Port, is a major port in Tamil Nadu.

• Mormugao Port is one of the oldest ports in Goa and plays a significant role in the economy of Goa.

• Kandla Port, also known as Deendayal Port, is one of the major ports in western India, situated in Gujarat.

Q71. Answer: (d) 25 cm2

Given:

Perimeter of the square = 20 cm

Formula Used:

Perimeter of a square = 4 × side

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Area of a square = side²

Calculation:

Let the side of the square be s cm.

Perimeter = 4 × s

=> 20 = 4 × s

=> s = 20 / 4

=> s = 5 cm

Area = s²

=> Area = 5²

=> Area = 25 cm²

The area of the square is 25 cm².

Q72. Answer: (d) Kalahari Desert - India

The correct answer is Kalahari Desert - India

Key Points

• Option 4 is incorrect because the Kalahari Desert is located in Southern Africa, not India.

• The Great Victoria Desert is correctly located in Australia.

• The Patagonian Desert is correctly located in Argentina.

• The Sahara Desert is correctly located on the African continent.

Additional Information

• The Kalahari Desert spans parts of Botswana, Namibia, and South Africa.

• Deserts are typically characterized by low rainfall, extreme temperatures, and sparse vegetation.

• These geographical locations are significant for understanding global climate patterns and biodiversity.

Q73. Answer: (b) Basic Input/Output System

The correct answer is Basic Input/Output System

Key Points

• The full form of BIOS is Basic Input/Output System.

• BIOS is a fundamental component in computers, serving as the interface between the computer's firmware and its operating system.

• It is responsible for booting up the computer and initiating hardware components before handing control over to the operating system.

• BIOS is stored on a small memory chip on the motherboard, known as the ROM (Read-Only Memory).

• BIOS settings can be configured through the BIOS setup utility, which can be accessed during the computer's boot process.

Additional Information

• The term BIOS was first used by Gary Kildall in 1975 in the CP/M operating system.

• Modern computers have moved towards UEFI (Unified Extensible Firmware Interface) as a replacement for the traditional BIOS, offering more features and better security.

• Despite the advent of UEFI, the term BIOS is still widely used and understood in the context of computer firmware.

• BIOS updates can be performed to fix bugs, add new features, or support new hardware components.

• Incorrect BIOS settings or failed BIOS updates can result in hardware malfunction or failure to boot the computer.

Q74. Answer: (c) 17

Given:

A alone can do the work in 14 days.

B alone can do the work in 21 days.

B works alone on day 1 while A works alone on day 2, and the process continues.

Formula Used:

Work done by A in 1 day = 1/14

Work done by B in 1 day = 1/21

Work done in 2 days (1 cycle) = Work done by B on day 1 + Work done by A on day 2

Calculation:

Work done by B in 1 day = 1/21

Work done by A in 1 day = 1/14

Work done in 2 days (1 cycle) = (1/21) + (1/14)

Finding common denominator:

Work done in 2 days = (1/21) + (1/14)

=> Work done in 2 days = (2/42) + (3/42)

=> Work done in 2 days = (5/42)

Total work = 1 (whole work)

Number of complete cycles required to complete the work:

Number of complete cycles = (1/(5/42)) = 42/5 = 8.4 cycles

Since 8 complete cycles are not enough, we need an additional part of the cycle.

Work done in 8 cycles = 8 × (5/42) = (40/42) = (20/21)

Remaining work = 1 - (20/21) = (1/21)

On day 17, B works and completes the remaining work since B can complete (1/21) work in 1 day.

Thus, the total number of days required to complete the work is 17 days.

Q75. Answer: (d) Katabatic winds

The correct answer is Katabatic winds

Key Points

• Katabatic winds are downslope winds that flow from high elevations such as mountains, plateaus, and hills down to the valleys or plains below.

• These winds are driven by gravity and are typically stronger during the night when the cooling of the high elevation air makes it denser and heavier, causing it to flow downward.

• Katabatic winds can significantly influence local weather conditions and are known for their ability to cause rapid temperature drops.

• Examples of katabatic winds include the Bora in the Adriatic Sea region and the Mistral in southern France.

Additional Information

• Anabatic winds are the opposite of katabatic winds, flowing upslope due to thermal heating.

• Samoon winds are hot, dry winds that occur in the Middle East.

• Shamal winds are northwesterly winds that blow over Iraq and the Persian Gulf states.

• The study of wind patterns is essential for understanding weather phenomena and for applications in aviation, sailing, and agriculture.

Q76. Answer: (b) 21

Shortcut Trick

Total Work = 156 units (LCM of 39 and 52).

Efficiency: A = 156 ÷ 39 = 4, B = 156 ÷ 52 = 3.

A leaves 3 days before completion, so B works alone for the last 3 days.

Work done by B in 3 days = 3 × 3 = 9 units.

Work done together = 156 − 9 = 147 units.

Days worked together = 147 ÷ (4 + 3) = 21 days.

Therefore The correct answer is 21 days.

Alternate Method

Given: Time taken by A = 39 days, Time taken by B = 52 days. A leaves 3 days before the task ends.

Formula Used: Total Work = Efficiency × Time

Person	Days	Total Work (LCM)	Efficiency
A	39	156	156 ÷ 39 = 4
B	52	156 ÷ 52 = 3	

Calculations:

=> Let the total number of days to complete the work be T.

=> Since A leaves 3 days before completion, A worked for (T − 3) days.

=> B worked for the entire duration of T days.

=> Total Work = (Efficiency_A × Time_A) + (Efficiency_B × Time_B)

=> 156 = 4 × (T − 3) + 3 × T

=> 156 = 4T − 12 + 3T

=> 156 + 12 = 7T

=> 168 = 7T => T = 24 days.

=> The duration they worked together is the time A worked = T − 3 = 24 − 3 = 21 days.

Therefore The correct answer is 21 days.

Additional Information

Efficiency and Time Relation

Efficiency is inversely proportional to the time taken to complete a work. If the ratio of time taken is x : y, the ratio of efficiency is y : x.

Leaving Before Completion Rule

If a person leaves 'n' days before completion, we can conceptually add 'n' days of their work to the total work to calculate the total time as if they never left: Total Time = (Total Work + Efficiency_L × n) ÷ (Combined Efficiency).

Work and Wages

Wages are always distributed in the ratio of the actual work done by each person, which is (Efficiency × Time).

Q77. Answer: (b) E.Rutherford

The correct answer is E. Rutherford

Key Points

• Ernest Rutherford is widely recognized as the 'Father of Nuclear Physics'.

• He was the first person to successfully split the atom, which laid the foundation for the field of nuclear physics.

• Rutherford's gold foil experiment led to the discovery of the atomic nucleus, revolutionizing the understanding of atomic structure.

• His work has had a profound impact on both theoretical and experimental physics, influencing numerous areas of research and technological development.

Additional Information

• Ernest Rutherford was awarded the Nobel Prize in Chemistry in 1908 for his investigations into the disintegration of elements and the chemistry of radioactive substances.

• He is also known for the discovery of the concept of radioactive half-life and for differentiating and naming alpha and beta radiation.

• Rutherford's contributions extend beyond nuclear physics, influencing fields such as chemistry and radioactivity.

• His pioneering work paved the way for future scientific discoveries and advancements, including the development of nuclear energy and medical applications of radioactivity.

Q78. Answer: (a) Two

The correct answer is Two

Key Points

• Two times the Asian Games have been held in India.

• The first time was in 1951 in New Delhi.

• The second time was in 1982 also in New Delhi.

• India is one of the few countries to have hosted the Asian Games more than once.

• The 1951 Asian Games were the inaugural edition of the event.

Additional Information

• The Asian Games, also known as Asiad, is a continental multi-sport event held every four years among athletes from all over Asia.

• The Games were regulated by the Asian Games Federation (AGF) from the first Games in New Delhi, India until the 1978 Games.

• Since the 1982 Games, they have been organized by the Olympic Council of Asia (OCA), after the breakup of the Asian Games Federation.

• The Games are recognized by the International Olympic Committee (IOC) and are described as the second largest multi-sport event after the Olympic Games.

Q79. Answer: (c) 11/36

To find the value of 1 - $(5/6)^2$:

1. Calculate $(5/6)^2$:

$(5/6)^2 = (5 \times 5) / (6 \times 6) = 25 / 36$

2. Subtract this from 1:

1 - 25 / 36

Express 1 as a fraction with the same denominator:

1 = 36 / 36

1 - 25 / 36 = (36 - 25) / 36 = 11 / 36

The value is: 11 / 36

Q80. Answer: (a) 400

The correct answer is 400 bits

Key Points

• 1 nibble is equal to 4 bits.

• Therefore, 100 nibbles are equal to 100 x 4 = 400 bits.

Additional Information

• A nibble is a unit of digital information that consists of 4 bits.

• In computing, bits are the basic units of information, and multiple bits are used to represent data.

• Understanding the relationship between nibbles and bits is essential for various calculations in digital electronics and computer science.

Q81. Answer: (c) Geo Eye

The correct answer is Geo Eye

Key Points

• Geo Eye is the high-resolution camera onboard ISRO's communication satellite GSAT-29.

• It is capable of tracking enemy ships in the Indian Ocean, providing crucial surveillance data.

• GSAT-29 was launched to improve communication and strategic capabilities.

• The satellite also aims to provide high-speed internet connectivity to remote and rural areas.

• GSAT-29's advanced payloads include Q/V-band communication and optical communication for enhanced data transmission.

Additional Information

• ISRO (Indian Space Research Organisation) launched GSAT-29 on November 14, 2018, using the GSLV Mk III-D2 vehicle.

• This mission marked the second developmental flight of GSLV Mk III, demonstrating its capability to carry heavier payloads into geostationary transfer orbit.

• The satellite's mission life is estimated to be over 10 years, ensuring long-term benefits for communication and surveillance.

• GSAT-29's success contributes to India's growing prowess in space technology and strategic defense capabilities.

• ISRO continues to play a pivotal role in enhancing India's space-based assets for national security and development.

Q82. Answer: (c) Radon

The correct answer is Radon

Key Points

• Radon is a radioactive noble gas.

• It is part of the noble gas group in the periodic table, which also includes helium, neon, argon, krypton, and xenon.

• Radon is produced from the natural decay of uranium, which is found in soil, rock, and water.

• It is colorless, tasteless, and odorless, making it difficult to detect without specialized equipment.

• Exposure to high levels of radon can increase the risk of lung cancer.

Additional Information

• Radon was discovered in 1900 by Friedrich Ernst Dorn.

• The chemical symbol for radon is Rn, and its atomic number is 86.

• Radon levels are typically higher in areas with a lot of granite or other uranium-rich rock formations.

• Mitigation systems can be installed to reduce radon levels in buildings.

• Radon is used in some types of radiation therapy for cancer treatment.

Q83. Answer: (c) (45)/(4)

Given:

Fractions: (3)/(8), (9)/(20), and (15)/(16)

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Formula Used:

LCM of fractions = LCM of numerators / GCD of denominators

Calculation:

Numerators: 3, 9, 15

Denominators: 8, 20, 16

LCM of numerators (3, 9, 15):

Prime factors of 3: 3

Prime factors of 9: 3^2

Prime factors of 15: 3 × 5

LCM = $3^2 \times 5 = 9 \times 5 = 45$

GCD of denominators (8, 20, 16):

Prime factors of 8: 2^3

Prime factors of 20: $2^2 \times 5$

Prime factors of 16: 2^4

GCD = $2^2 = 4$

LCM of fractions = LCM of numerators / GCD of denominators

LCM of fractions = 45 / 4

The LCM of 3/8, 9/(20, and 15/16 is 45/4.

The correct answer is option 3

Q84. Answer: (b) Nagpur

The correct answer is Nagpur

Key Points

• Jantar Mantar is a collection of architectural astronomical instruments built by Maharaja Jai Singh II.

• There are five Jantar Mantars in India, located in Delhi, Jaipur, Ujjain, Varanasi, and Mathura.

• The Jantar Mantar in Jaipur is a UNESCO World Heritage Site.

• The Jantar Mantar in Varanasi is situated on the banks of the Ganges River.

• Ujjain's Jantar Mantar is known as the Vedh Shala Observatory.

Additional Information

• Jantar Mantar in Jaipur was built in 1734 and features the world's largest stone sundial.

• The primary purpose of these observatories was to compile astronomical tables and to predict the movements and timings of the sun, moon, and planets.

• Maharaja Jai Singh II was an avid astronomer and was inspired by the works of Ulugh Beg, a Timurid astronomer and mathematician.

• The instruments at Jantar Mantar are made of stone and brass, and they are large structures designed to observe celestial objects with the naked eye.

• Jantar Mantar in Delhi is located near Connaught Place and is a popular tourist attraction.

Q85. Answer: (d) 73/48

Given:

θ is an acute angle.

tan θ = 48/55

Formula Used:

csc θ = 1/(sin θ)

sin θ = opposite/hypotenuse

cos θ = adjacent/hypotenuse

tan θ = opposite/adjacent

Calculation:

From tan θ = 48/55

Let opposite = 48 and adjacent = 55.

Using Pythagorean theorem to find hypotenuse:

hypotenuse = $\sqrt{(48^2 + 55^2)}$

hypotenuse = $\sqrt{(2304 + 3025)}$

hypotenuse = √5329

hypotenuse = 73

Now, sin θ = 48/73

csc θ = 1/(sin θ)

csc θ = 1/(48/73)

csc θ = 73/48

The value of csc θ is 73/48.

Q86. Answer: (c) MN

The logic followed here is:

Hence, "Option 3" is the correct answer.

Q87. Answer: (d) 3814

The logic followed here is:

STAR is coded as 3782

Letters	S	T	A	R
Codes	3	7	8	2

And,

PLANE is coded as 51894

Letters	P	L	A	N	E
Codes	5	1	8	9	4

Therefore, SALE will be coded as

Letters	S	A	L	E
Codes	3	8	1	4

Hence, "Option 4" is the correct answer.

Q88. Answer: (b) T

Given: P, Q, R, S, T and U are sitting in a row facing towards the north.

1) P sits second to the left of S and third to right of U.

2) Only two persons sit between R and Q.

3) Q is not neighbour of S.

After positioning R and Q only one position is left which will be occupied by the only person left i.e T.

Thus, T sits to the immediate left of P.

Hence, "Option 2" is the correct answer.

Q89. Answer: (c) Factory

The logic followed here is:

Logic: Workplace association.

Here,

Waiter : Restaurant → Waiter works in a Restaurant.

Similarly,

Worker : Factory → Worker works in a Factory.

Hence, the correct answer is "Option 3".

Q90. Answer: (b) Both 'A' and 'R' are true but 'R' is not the correct explanation of 'A'.

Given:

A. Some people have darker skin colour.

R. Some people have blood of darker colour.

Assertion (A): Some people have darker skin colour → True

The variation in skin colour among people is due to the presence of different levels of melanin, a pigment produced by melanocytes in the skin. Genetic factors, exposure to sunlight, and certain medical conditions can influence skin colour.

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Reason (R): Some people have blood of darker colour → True

The colour of blood is generally the same for all humans, as it is determined by the presence of hemoglobin which is red when oxygenated. Differences in blood colour are not responsible for variations in skin colour.

So, Both 'A' and 'R' are true but 'R' is not the correct explanation of 'A'.

Hence, the correct answer is "Option 2"

Q91. Answer: (a) Father's Father

Given: Mohit is the father-in-law of Rani's mother.

Here, Mohit is the paternal grandfather or father's father of Rani.

Hence, the correct answer is "Option 1".

Q92. Answer: (b) 1113

The logic followed here is:

Hence, "1113" is the correct answer.

Q93. Answer: (d) P1R

The logic followed here is:

Hence, "Option 4" is the correct answer.

Q94. Answer: (c) Both 'A' and 'R' are true and 'R' is the correct explanation of 'A'.

Assertion (A): A satellite is not a planet → True

A satellite, also known as a moon, is a celestial body that orbits a planet. Unlike planets, satellites do not orbit stars directly but revolve around planets. This distinct characteristic differentiates satellites from planets.

Reason (R): Planets do not revolve around other planets → True

Planets revolve around stars, not other planets. In our solar system, for example, planets orbit the Sun, while moons orbit planets. This is a fundamental aspect of the definition of a planet.

Hence, the correct answer is "Both 'A' and 'R' are true and 'R' is the correct explanation of 'A'."

Additional Information

• Satellites or moons can vary greatly in size, and some are even larger than the smallest planets in our solar system. However, their defining characteristic is their orbit around a planet rather than a star.

Q95. Answer: (d) Madhya Pradesh

Given:

There are five girls A, B, C, D and E.

They are married to boys from five different states Uttar Pradesh, Madhya Pradesh. Jharkhand, Bihar and Odisha

All the boys are in five different professions Politician, Professor, Teacher, Doctor and Engineer.

1) D is married to a doctor, B is married to a man from Uttar Pradesh, who is not a professor or politician.

2) C is married to a person who is from Bihar.

Girls	Boy's states	Boy's profession
A		
B	Uttar Pradesh	
C	Bihar	
D		Doctor
E		

3) E is married to an engineer and he is not from Jharkhand or Madhya Pradesh.

As E is not married to a boy from neither Jharkhand nor Madhya Pradesh, therefore only state left is Odisha

Girls	Boy's states	Boy's profession
A		
B	Uttar Pradesh	
C	Bihar	

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D		Doctor
E	Odisha	Engineer

4) The politician is not from Bihar or Jharkhand.

As it is given that B is married to a man who is neither a professor nor politician, therefore only profession is left is teacher.

As the politician is neither from Bihar nor Jharkhand, therefore only state left is Madhya Pradesh.

After assigning all the professions only one profession is left, therefore C is married to a professor.

Girls	Boy's states	Boy's profession
A	Madhya Pradesh	Politician
B	Uttar Pradesh	Teacher
C	Bihar	Professor
D	Jharkhand	Doctor
E	Odisha	Engineer

Thus, according to the final arrangement A is married to a person from Madhya Pradesh.

Hence, "Option 4" is the correct answer.

Q96. Answer: (d) 36

Given:

Number of erasers = 4

Number of sharpeners = one-fourth of the number of pencils

Total number of items = 49

Formula Used:

Total number of items = Number of erasers + Number of pencils + Number of sharpeners

Calculation:

Let the number of pencils be.

Number of sharpeners =

Total number of items = 4 + + x4x4x4x4x4x4x4x4

49 = 4 + xxxx + x4x4

=> 49 - 4 = xxxx4x4x4x4

• x4x4x44x+x44x+x44x+x4

=> 45 = + x4x4x4

=> 45 = 4x+x44x+x44x+x4

=> 45 × 4 = 5x

=> 180 = 5x

=> x = 180518051805

=> x = 36

The number of pencils Anushka has is 36.

Q97. Answer: (b) 482

The logic followed here is:

Logic: Reverse digits of 1st number = 2nd number.

Now,

For, 179 : 971

=> Reverse digits of 179 = 971.

For, 284 : ?

=> Reverse digits of 284 = 482.

Hence, the correct answer is "Option 2".

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Q98. Answer: (a) Neither i nor ii follows.

The least possible Venn diagram for the given statements is as shown below :

Conclusions:

I. Some horses are monkeys → Does not follow (As all horses are donkeys and all monkeys are donkeys. So it is possible but not definite.)

II. Some monkeys are horses → Does not follow (As all horses are donkeys and all monkeys are donkeys. So it is possible but not definite.)

Therefore Here, Neither conclusions I nor II follow.

Hence, the correct answer is "Option 1"

Q99. Answer: (a) EHK

The logic followed here is:

Option 1) EHK

Option 2) PRT

Option 3) BDF

Option 4) GIK

Thus, out of all the options 'EHK' is the odd one out.

Hence, "Option 1" is the correct answer.

Q100. Answer: (a) GQRV

The logic followed here is:

LQRT : DIJL

Similarly,

OYZD : ?

Hence, "Option 1" is the correct answer.

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