RRB NTPC CBT-I Official Paper (Held On: 20 Jan 2021 Shift 1) (Previous Year Paper)

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

Take this paper as a timed mock test

Practise under exam conditions, then review your answers after you submit.

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

Q1. Who won the Noble Peace Prize in 2007 for flagging environmental issues?

(a) World Wide Fund For Nature
(b) Inter Governmental Panel on Climate Change and Al Gore
(c) Greenpeace
(d) Sierra Club

Q2. In which city is the headquarters of Indira Gandhi National Centre for Arts located?

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

Q3. A map of a city is drawn on a scale of 1 : 150000. The distance between two cities, A and B, on this map is 6 cm. What will be the actual distance between the two cities?

(a) 15 km
(b) 6 km
(c) 12 kmns found. English Question 1 options 3,4
(d) 9 km

Q4. Which of the assumptions given in the options is implicit in the statements?

Statements:

All Explosives are Sound.

Some Bombs are Exclusively Sound.

Some light are Bombs but not Sound.

(a) Some Sounds are only Bombs.
(b) Some Explosives are Lights.
(c) All Sounds are Explosives.
(d) Some Bombs are Explosives.

Q5. Select the term that can replace the question mark (?) in the following analogy.

STYLE : 81 : ARRIVAL :: CRACK : 36 : ?

(a) SMELL
(b) STREAM
(c) RIDE
(d) ROSE

Q6. Select the option that is related to the third term in the same way as the second term is related to the first term.

Water : Pump :: Blood : ?

(a) Wound
(b) Arteries
(c) Heart

(d) Veins

Q7. Who won the Orange Cap for maximum runs in IPL-2020?

(a) Kieron Pollard
(b) Chris Gayle
(c) K L Rahul
(d) Kane Williamson

Q8. If the cost price of 10 shirts is equal to the selling price of 8 shirts, then what will be the percentage gain or loss?

(a) 25% gain
(b) 20% gain
(c) 25% loss
(d) 20% loss

Q9. What is the botanical name of common wheat?

(a) Triticum Aestivum
(b) Brassica Campestris
(c) Zea Mays
(d) Hibiscus Rosa Sinensis

Q10. Which of the following strait connects the Atlantic Ocean with the Pacific Ocean?

(a) The Strait of Dardenelles
(b) The Strait of Malacca
(c) The Strait of Magellan
(d) Palk Straits

Q11. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

All Matter is Space.

Some Mass is Matter.

Conclusions:

A. All Mass is Space.

B. Some Mass is Space.

C. Some Space is Mass.

D. All Space is Mass.

E. All Matter is Mass.

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

Q12. Which country is the biggest producer of coffee in the world?

(a) Vietnam
(b) Colombia
(c) India
(d) Brazil

Q13. The mean of the first eight odd natural numbers is:

(a) 8
(b) 9
(c) 11
(d) 10

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Q14. Read the given statements (Assertion and Reason) carefully and select the most appropriate option with respect to them.

Assertion (A): Trees grow against gravity.

Reason (R): Nature defies gravitational law.

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

Q15. A physical education teacher has to distribute 96 bats and 180 balls among a number of players, such that all players get the same number of bats and, likewise, all players get the same number of balls. What will be the greatest number of players receiving the gift?

(a) 12
(b) 6
(c) 16
(d) 4

Q16. Which newspaper did Mahatma Gandhi start in South Africa?

(a) Indian Sociologist
(b) Common Weal
(c) National Herald
(d) Indian Opinion

Q17. Consider the given statements and decide which of the given assumptions does not follow from the given statements:

Some Grass is Green.

All Green is Red.

(a) Some Green is Grass
(b) Some Grass is Red
(c) Some Grass is Red and Green
(d) All Red is Green

Q18. Select the number from among the given options that can replace the question mark(?) in the following table.

21	**18**	**9**
42	?	18
84	72	36

(a) 26
(b) 24
(c) 35
(d) 36

Q19. Ram Prasad Bismil was hanged for _____.

(a) Chatgaon Armoury raid
(b) Kakori train heist
(c) Meerut Conspiracy
(d) Lahore Conspiracy

Q20. In how many years will a sum of Rs. 1,600 amount to Rs. 2,116 at 15% compound interest?

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

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Q21. Four options have been given, out of which three are alike in some manner and one is different. Select the option that is different from the rest.

(a) 0.4545...
(b) π
(c) √3
(d) 0.120120012000……

Q22. Which country out of the following is NOT a member of the BRICS group?

(a) Brazil
(b) India
(c) South Africa
(d) Sri Lanka

Q23. 1 + tan 15° cot 75° is equal to:

(a) $\cos^2 15°$
(b) $\sin^2 15°$
(c) $\sec^2 15°$
(d) $\text{cosec}^2 15°$

Q24. If A + B = 90° and sin A = 3/5, then the value of tan B is:

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

Q25. $(\sqrt{3} + \sqrt{11})^2$ is a/an:

(a) rational number
(b) whole number
(c) irrational number
(d) natural number

Q26. Which constitutional amendment gave the Directive Principles precedence over Fundamental Rights?

(a) 42^(nd)
(b) 55^(th)
(c) 44^(th)
(d) 43^(rd)

Q27. Who proposed the laws of planetary motion?

(a) Roger Bacon
(b) Isaac Newton
(c) Johannes Kepler
(d) Galileo

Q28. Who wrote the famous Bangla novel ‘Pather Panchali?

(a) Bibhutibhushan Bandopadhyay
(b) Bankim Chandra Chattopadhay
(c) Sharat Chandra Chattopaydhy
(d) Rabindra Nath Tagore

Q29. The average weight of an apple in a sample of 10 apples was calculated as 104 g. Later on, it was found that the weighing had shown the weight of each apple 20 g less. The correct average weight of an apple in that sample is:

(a) 1240 g
(b) 200 g
(c) 124 g
(d) 84 g

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Q30. The decimal expression of 3/8 comes to an end after how many digits after the decimal?

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

Q31. As of October 2020, who is the President of Sri Lanka?

(a) Gotabaya Rajapaksa
(b) Mahinda Rajapaksa
(c) Ranil Wickramsinghe
(d) Chandrika Kumaratunga

Q32. Which is the largest island in the Mediterranean Sea?

(a) Sicily
(b) Malta
(c) Crete
(d) Valetta

Q33. Name the first lady President of the Indian National Congress.

(a) Nellie Sengupta
(b) Indira Gandhi
(c) Sarojini Naidu
(d) Annie Besant

Q34. In a certain code language, STUDFARM is written as FGHQSNEZ. How will NUCLEAR be written as in that language?

(a) FLQYVNE
(b) AHPYRNE
(c) GSQUCNE
(d) DKQTCNE

Q35. Select the alphanumeric-cluster from among the given options that can replace the question mark(?) in the following series.

2D, 3I, 4P, ?

(a) 5Z
(b) 5Y
(c) 5W
(d) 5X

Q36. Which of the following is NOT a quadratic equation?

(a) $(m ? 2)^3 = m^3 ? 4$
(b) $m(2m + 3) = m^2 + 1$
(c) $x(x + 1) + 8 = (x + 2) (x ? 2)$
(d) $(y ? 2)^2 + 1 = 2y ? 3$

Q37. Who is credited with developing the “C” language?

(a) Bill Gates
(b) Steve Rogers
(c) Dennis Ritchie
(d) Yashwant Kanetkar

Q38. Which one of the following is NOT an Office Package?

(a) Microsoft office 2010
(b) WPS
(c) Libre

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(d) Quantum

Q39. Which one of the following is NOT associated with the Indian Freedom Struggle?

(a) Wavell Plan
(b) Cripps Mission
(c) New Deal
(d) Simon Commission

Q40. What is the name of the web portal launched by the Department of Telecommunications that will allow tracking of radiation emitted from mobile towers within their locality and check for their compliance with the Electro-Magnetic Field (EMF) emission norms defined by the government?

(a) Sanchar Gyan
(b) Tarang Sancharwith
(c) Tarang Kiran
(d) Sanchar Seva

Q41. In which country is the Taklamakan desert located?

(a) China
(b) Mongolia
(c) Yemen
(d) Iraq

Q42. The product of √2 and √3 is:

(a) an irrational number
(b) sometimes a rational number and sometimes an irrational number
(c) equal to 4
(d) a rational number

Q43. As of October 2020, who is the Governor of the Reserve Bank of India?

(a) Raghuram Rajan
(b) Urijit Patel
(c) Arvind Subramanian
(d) Shaktikanta Das

Q44. In a certain code language, STORMY is written as ABFIDG. How will LOTUS be written as in that language?

(a) CFBCA
(b) NQVWU
(c) MPUVT
(d) KNSTR

Q45. 0.2323... is:

(a) a composite number
(b) a rational number
(c) a prime number
(d) an irrational number

Q46. Rakhi scored 12 marks more than Mohan. If Rakhi scored 54% marks out of a maximum of 200, how much did Mohan score?

(a) 96 marks
(b) 34 marks
(c) 46 marks
(d) 69 marks

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Q47. Who gave the term ‘homo sapiens’?

(a) G. J. Mendal
(b) C. Linnaeus
(c) Miller
(d) Darwin

Q48. The largest four-digit number that is exactly divisible by 83 is:

(a) 9936
(b) 9960
(c) 9954
(d) 9966

Q49. How many triangles are there in the given figure?



(a) 10
(b) 12
(c) 8
(d) 6

Q50. Who is the writer of the book ‘India Divided’?

(a) Mulkraj Anand
(b) Chaudhry Khaleequzaman
(c) Khushwant singh
(d) Rajendra Prasad

Q51. Who was the President of the Constituent Assembly of India after independence?

(a) C Rajgopalachari
(b) Dr. B R Ambedkar
(c) Dr. Rajendra Prasad
(d) Acharya Narendra Dev

Q52. If mean = (3 median – mode)/p, then the value of p is:

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

Q53. In which city is the headquarters of the International Rice Research Institute located?

(a) Rome
(b) New York
(c) Los Banos

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(d) Paris

Q54. If the amount in a bill is decreased by 10%, then Rs. 279 is to be paid. How much is the original bill?

(a) Rs. 280
(b) Rs. 330
(c) Rs. 300
(d) Rs. 310

Q55. What will be the volume of a cube whose total surface area is 1944 cm^2?

(a) 5832 cm^3
(b) 3888 cm^3
(c) 729 cm^3
(d) 972 cm^3

Q56. Who was the first Speaker of the Lok Sabha?

(a) Rajendra Prasad
(b) Purushottam Tandon
(c) Hukum Singh
(d) G V Mavalankar

Q57. Given below are few statements and their respective codes in a particular language:
Horse are Cat – XYT
Cat is Blue – TMZ
Blue is Cloud – ZMS
Which of the given options will be the code for the following statement in that language:
Blue Cat is Cloud-?

(a) XTSM
(b) MZTS
(c) YTZM
(d) ZTMS

Q58. $(\sqrt{7} + \sqrt{9})(\sqrt{7} - \sqrt{9})$ is equal to:

(a) 2
(b) -63
(c) 16
(d) -2

Q59. Which one of the following is called a super-network or meta-network?

(a) Server
(b) MAN
(c) LAN
(d) Internet

Q60. What is the third proportional to 16 and 40?

(a) 40
(b) 10
(c) 640
(d) 100

Q61. Who among the following received the Padma Vibhushan for the year 2020?

(a) Bachendri Pal
(b) Nambi Narayan
(c) Mohan Lal
(d) George Fernandes

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Q62. Albert Einstein was awarded the Nobel Prize for _____ in 1921.

(a) Photoelectric Effect
(b) Radioactivity
(c) Doppler Effect
(d) Theory of Relativity

Q63. Which of the following financial inclusion schemes was launched in June 2015 to prompt the unorganised workforce to join the National Pension Scheme?

(a) Pradhan Mantri Suraksha Bima Yojana
(b) Pradhan Mantri Jeevan Jyoti Bima Yojana
(c) Pradhan Mantri Jan Dhan Yojana
(d) Atal Pension Yojana

Q64. Which one of the following programmes is associated with the development of road transport in India?

(a) NREGP
(b) MNREGA
(c) Golden Quadrilateral
(d) NRHM

Q65. Which one of the following ports is NOT located on the Eastern Coast of India?

(a) Kandla
(b) Paradeep
(c) Tuticorin
(d) Haldia

Q66. Gulf Streams emanate from the gulf of:

(a) Saudi Arabia
(b) Kuwait
(c) Mexico
(d) Oman

Q67. The mean of m + 3, m + 5, m + 6, m + 9 and m + 12 is:

(a) m + 7
(b) m + 3
(c) m + 9
(d) m + 6

Q68. Which of the following is a rational number between √5 and √7 ?

(a) 41/5
(b) 31/5
(c) 22/5
(d) 11/5

Q69. What was the name of the first Indian satellite launched into the orbit?

(a) Aryabhata
(b) Rohini
(c) Kalpana
(d) Bhaskara

Q70. The value of $16x^4 + 25y^2 – 40x^2y$ at x = 5 and y = 2 is:

(a) 8100
(b) 12100
(c) 10000
(d) 9000

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Q71. What will be the area of the ring-shaped region enclosed between two concentric circles of radii 14 cm and 7 cm?

(a) 147 cm²
(b) 245 cm²
(c) 98 cm²
(d) 462 cm²

Q72. As of October 2020, who is the CEO of NITI Aayog?

(a) Rajesh Mohan
(b) Arvind Panagariya
(c) Rajiv Kumar
(d) Amitabh Kant

Q73. Select the option that is related to the third term in the same way as the second term is related to the first term.

Rhinoceros : Battle Tank :: Shark : ?

(a) Ship
(b) Submarine
(c) Boat
(d) Yatch

Q74. Which architect has designed the India Gate in New Delhi?

(a) Edwin Lutyens
(b) Le Courbusier
(c) Albert Speer
(d) Laurie Baker

Q75. A 400-m-long train is travelling at a speed of 60 km/h. How much time will it take to cross at 600-m-long bridge?

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

Q76. Which scheme of the Government of India provides for the delivery of LPG cylinders to the below poverty line (BPL) families?

(a) National Social Assistance Programme
(b) Ayushman
(c) Ujjwala
(d) National Health Mission

Q77. Consider the given statements and decide which of the given assumptions is implicit in the statements.

Statements:

Some Pens are Inks.

Some Inks are Pencils.

All Pencils are Pens.

(a) All Pens are Pencils
(b) All Pencils are Inks
(c) Some Inks are only Pencils
(d) Some Pens are Pencils

Q78. Name the famous biologist with whom the Galapagos Islands is associated.

(a) Carl Linnaeus
(b) Ernst Haeckel
(c) Johann Gregor Mendel
(d) Charles Darwin

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Q79. If the HCF of 51 and 85 is expressed in the form of 51 m – 85, then the value of m will be:

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

Q80. A number is first decreased by 5% and then increased by 5%. What will be the net increase or decrease?

(a) 0.25% decrease
(b) 0.25% increase
(c) 25% decrease
(d) No increase or decrease

Q81. A tank has two inlets, A and B, which can fill it in 15 hours and 20 hours, respectively. An outlet C can empty the full tank in 12 hours. If A, B and C are opened together when the tank is empty, then in how much time will the tank be filled?

(a) 40 hours
(b) 35 hours
(c) 27 hours
(d) 30 hours

Q82. A and B can finish a work in 9 days, B and C can finish it in 12 days and A and C can finish it in 18 days. In how many days can A, B and C finish the work together?

(a) 9
(b) 7
(c) 8
(d) 6

Q83. How many nuclear power plants are in operation in India as of October 2020?

(a) Five
(b) Four
(c) Eight
(d) Seven

Q84. Which Indian wildlife sanctuary is the home for Asiatic Lions?

(a) Gir
(b) Sariska
(c) Kanha
(d) Bandhavgarh

Q85. L, M, N, O, P, Q, R and S are sitting in a circle facing the centre. S is to the right of R, P is to the left of N and right of L, R is to the right of O and O is to the right of N. If Q is the right of S, then who is to the right of M?

(a) R
(b) Q
(c) P
(d) L

Q86. According to the given table, what is the number of students in 11^(th) standard who passed?

Class	Subjects	Pass % of Students	No. of Failed Students
10^(th)	Maths	65	105
10^(th)	Hindi	80	120
11^(th)	English	40	360
12^(th)	Psychology	75	100

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12^(th)	Biology	50	110

(a) 600
(b) 120
(c) 360
(d) 240

Q87. According to the given table, what is the percentage of the total students who failed considering all the three classes i.e. 10^(th), 11^(th) and 12^(th) and in all five given subjects?

Class	Subjects	Pass % of Students	No. of Failed Students
10^(th)	Maths	65	105
10^(th)	Hindi	80	120
11^(th)	English	40	360
12^(th)	Psychology	75	100
12^(th)	Biology	50	110

(a) 31.8
(b) 37.5
(c) 36.7
(d) 38.6

Q88. According to the given table, what is the ratio of total students who passed to total students who failed considering all the three classes i.e. 10^(th), 11^(th) and 12^(th) and all the five given subjects?

Class	Subjects	Pass % of Students	No. of Failed Students
10^(th)	Maths	65	105
10^(th)	Hindi	80	120
11^(th)	English	40	360
12^(th)	Psychology	75	100
12^(th)	Biology	50	110

(a) 369 : 141
(b) 265 : 159
(c) 275 : 139
(d) 173 : 138

Q89. According to the given table, in which two subjects were the number of students who passed, the highest?

Class	Subjects	Pass % of Students	No. of Failed Students
10^(th)	Maths	65	105
10^(th)	Hindi	80	120
11^(th)	English	40	360
12^(th)	Psychology	75	100
12^(th)	Biology	50	110

(a) Psychology and Maths
(b) Biology and Psychology
(c) Hindi and Maths
(d) Psychology and Hindi

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Q90. Select the number from among the given options that can replace the question mark (?) in the following series.

3, 4, 8, 26, 122?

(a) 722
(b) 180
(c) 760
(d) 360

Q91. Read the given statements (Assertion and Reason) carefully and select the most appropriate option with respect to them.

Assertion (A): Greenland is entirely green.

Reason (R): Polar regions have snow round the year.

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

Q92. The 5^(th) part of a number when divided by 3 yields three times half of tenth part of half of 80. What is the number?

(a) 90
(b) 60
(c) 45
(d) 44

Q93. Select the number from among the given options that can replace the question mark (?) in the following series.

13, 28, 58, ?, 238

(a) 118
(b) 119
(c) 120
(d) 116

Q94. Consider the given statements and decide which of the given assumptions is/are implicit the statements.

Statements:

Some Benches are Nails.

All Benches and Nails are Metal.

Some Woods are Nails.

Assumptions:

A. Some Woods are only Metal.

B. Some Woods are only Benches.

C. Some Benches are Woods.

D. Some Metal are Woods.

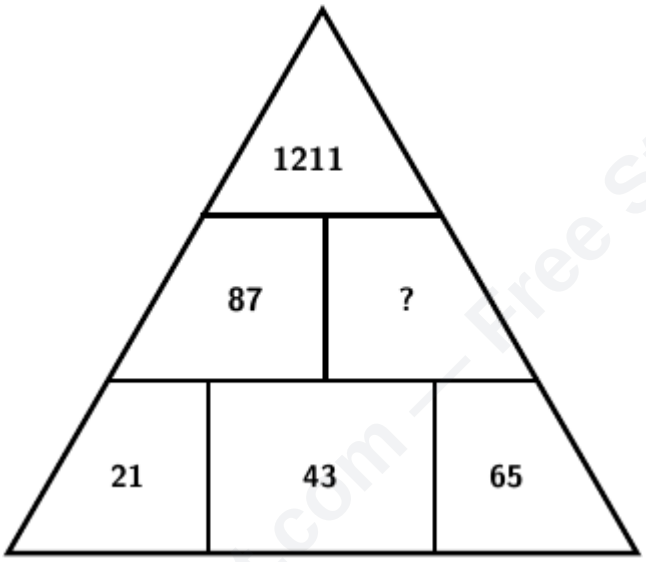
(a) C
(b) A
(c) D
(d) B

Q95. In a row of 16 girls, when Seema was shifted by two places towards the left, she became the 7^(th) from the left end. What was her earlier position from the right end of the row?

(a) 7^(th)
(b) 9^(th)
(c) 8^(th)
(d) 10^(th)

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Q96. Select the number from among the given options that can replace the question mark (?) in the following pattern.



(a) 1110
(b) 98
(c) 109
(d) 90

Q97. Identify the number that does NOT belong to the following series.

7, 14, 56, 448, 2688, 26880

(a) 448
(b) 2688
(c) 26880
(d) 56

Q98. Complete the following alphabetical sequence.

A, AC, DAD, FEE, JACK, _____

(a) ARRIVAL
(b) FATHER
(c) SMELL
(d) RIDE

Q99. If CPHUDQ = 6 and BOY = 6, then which of the given options will FUNDAMENTAL be equal to?

(a) 111
(b) 16
(c) 3
(d) 27

Q100. Consider the given statements and decide which of the given conclusions do NOT follow from the statements.

Statements:

All Bulls are Black but not Cows.

All Cows are Black.

Conclusions:

1. Some Cows are Bulls.
2. All Blacks are Cows.
3. All Blacks are Bulls.

(a) 3 and 1 Only
(b) 1 and 2 Only
(c) None follows

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(d) 2 and 3 Only

ANSWER KEY

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

SOLUTIONS

Q1. Answer: (b) Inter Governmental Panel on Climate Change and Al Gore

The correct answer is Inter Governmental Panel on Climate Change and Al Gore.

Key Points

• The Nobel Peace Prize has been awarded to the Intergovernmental Panel on Climate Change (IPCC) and Albert Arnold (Al) Gore Jr. "for their efforts to build up and disseminate greater knowledge about man-made climate change, and to lay the foundations for the measures that are needed to counteract such change."

• The Nobel Committee decided that the prize would be split in half, with the IPCC receiving half and Al Gore receiving the other half.

• As a result, the Committee is "hoping to contribute to a clearer emphasis on the processes and actions that appear to be necessary to protect the world's future climate, and thereby to decrease the threat to mankind's security."

Important Points

• Albert Arnold Gore Jr. is an American politician and environmentalist who served as President Bill Clinton's 45th vice president from 1993 until 2001.

• In the 2000 presidential election, Gore was the Democratic nominee, but he lost to George W. Bush in a close contest after a Florida recount.

Additional Information

• The Nobel Peace Prize, along with the prizes in Chemistry, Physics, Physiology or Medicine, and Literature, was founded by the will of Swedish industrialist, inventor, and armaments maker Alfred Nobel.

Q2. Answer: (a) New Delhi

The correct answer is New Delhi.

Key Points

• The Indira Gandhi National Centre for the Arts (IGNCA) is India's most prestigious government-funded arts organisation.

• Its headquarters is located in New Delhi.

• It is a self-contained institute under the control of the Union Ministry of Culture. Prime Minister Shri Rajiv Gandhi unveiled the IGNCA on November 19, 1985, at a ceremony in which the symbolism of the various components was explicitly explained at various levels.

• The elements were brought together: fire, water, soil, sky, and vegetation.

• Five rocks from five important rivers were sculpted into sculptural forms: Sindhu (Indus), Ganga, Kaveri, Mahanadi, and Narmada (where the oldest ammonite fossils are found).

• These are still there at the location as a reminder of Indian culture's antiquity and the sacredness of her rivers and rocks.

• On March 24, 1987, the Indira Gandhi National Centre for the Arts Trust was established and registered in New Delhi.

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Q3. Answer: (d) 9 km

Given

1 : 150000

Concept

Direct variation

If the one quantity(say x) increase or decrease, the other quantity(say y) also increases or decrease to the same extent. then the variation is known as direct variation.

so, If x1 and x2 are the values of x quantity and y1 and y2 are the values of y quantity, then

x1y2 = y1x2

Calculation

x1 = 1, y1 = 150000, x2 = 6 and y2= y2

=> x1 × y2 = 150000 × 6

=> 1 × y2 = 9,00,000

=> y2 = 9,00,000

1 km = 1,00,000 cm

so,y2 = 9 Km

Therefore The actual distance between the two cities is 9 km.

Q4. Answer: (a) Some Sounds are only Bombs.

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

Options :

1) Some Sounds are only Bombs → True (As Some Bombs are Exclusively (only) Sound so, Some Sounds are only Bombs is true)

2) Some Explosives are Lights → False (it is possible but not definite)

3) All Sounds are Explosives → False (this is not possible as some Bombs are Exclusively (only) Sound)

4) Some Bombs are Explosives → False (this is not possible as some Bombs are Exclusively (only) Sound)

Therefore Here, Only Option 1 i.e., Some Sounds are only Bombs is true.

Hence, the correct answer is "Some Sounds are only Bombs".

Q5. Answer: (c) RIDE

The logic followed here is :

• Consider STYLE : 81 : ARRIVAL

STYLE:

• => 19 + 20 + 25 + 12 + 5 = 81

Similarly, ARRIVAL:

• => 1 + 18 + 18 + 9 + 22 + 1 + 12 = 81

Now,

• CRACK : 36 : ?

CRACK:

• => 3 + 18 + 1 + 3 + 11 = 36

Option 1) SMELL :

• => 19 + 13 + 5 + 12 + 12 = 61

Option 2) STREAM:

• => 19 + 20 + 18 + 5 + 1 + 13 = 76

Option 3) RIDE:

• => 18 + 9 + 4 + 5 = 36

Option 4) ROSE:

• => 18 + 15 + 19 + 5 = 57

Therefore Here, sum of positional values of the word RIDE is 36.

Hence, the correct answer is "36".

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Q6. Answer: (c) Heart

The logic followed here is:

• Water is circulated or pumped by a pump.

• Similarly, Blood is circulated or pumped by the heart.

Hence, the correct answer is "Heart".

Q7. Answer: (c) K L Rahul

The correct answer is K L Rahul.

Key Points

• With 670 runs, KL Rahul earns the orange cap. In IPL 2020, KL Rahul was the player of Kings XI Punjab(Now Punjab Kings).

• The batter with the most runs in the tournament is awarded the Orange Cap.

• The top batsman in the event is given the honour of wearing this cap on the pitch.

Additional Information

• Kagiso Rabada of the Delhi Capitals earned the Purple Cap after finishing first in the table with 30 wickets at the end of IPL 2020.

• The Purple Cap award is given to bowlers competing in the Indian Premier League (IPL).

• The Purple Cap is given to the bowler who has taken the most wickets in a given edition of the prestigious Indian Premier League (IPL).

• In IPL 2021, the orange cap was won by Chennai Super Kings batter Ruturaj Gayakwad and the purple cap was won by Royal Challengers Bangalore bowler Harshal Patel.

Q8. Answer: (a) 25% gain

Given

Cost price of 10 shirts = Selling price of 8 shirts

Formula used

Profit = Selling price - Cost price

Profit % = (profit/cost price) × 100

Calculation

Cost price of 10 shirt = Rs. 10

Cost price of 1 shirt = 10/10

=> Re. 1

Selling price of 8 shirts = Rs. 10

Selling priced of 1 shirt = 10/8

=> Rs. 1.25

Profit = 1.25 - 1

=> 0.25

Profit % = (0.25/1) × 100

=> 25%

Therefore The gain % will be 25.

Q9. Answer: (a) Triticum Aestivum

The correct answer is Triticum Aestivum.

Key Points

• A farmed wheat species, common wheat (Triticum aestivum), is also known as bread wheat.

• Common wheat accounts for approximately 95% of all wheat produced worldwide; it is the most extensively farmed of all cereals and the cereal with the largest monetary yield.

• Wheat is an allohexaploid plant (an allopolyploid with six sets of chromosomes: two sets from each of three different species).

• Two sets of chromosomes come from Triticum Urartu (einkorn wheat) and two from an Aegilops speltoides-related species.

Important Points

• Brassica is a plant genus that includes cabbage and mustard plants (Brassicaceae).

• Maize is a member of the grass family Poaceae, or true grasses, and belongs to the Zea mays genus.

• Hibiscus rosa-Sinensis is a tropical hibiscus species that belongs to the Hibisceae tribe of the Malvaceae family.

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Q10. Answer: (c) The Strait of Magellan

The correct answer is the Strait of Magellan.

Key Points

• The Magellan Strait, also known as the Magellan Channel, is a passable maritime channel in southern Chile that connects mainland South America to Tierra del Fuego.

• The strait is the most important natural connection between the Atlantic and Pacific oceans.

• It was discovered and traversed by Europeans for the first time in 1520 by a Spanish expedition led by Portuguese explorer Ferdinand Magellan, after whom it is called.

• The strait had previously been navigated by indigenous peoples in canoes, including the Kawésqar.

Important Points

• The Dardanelle, also known as the Strait of Gallipoli from the Gallipoli peninsula or the Hellespont from Classical Antiquity, is a thin, natural strait in northwestern Turkey that separates Asian Turkey from European Turkey and constitutes part of the continental barrier between Asia and Europe.

• The Strait of Malacca is a 580-mile-long strait that connects the Malay Peninsula to the Indonesian island of Sumatra.

• The Palk Strait connects the Indian state of Tamil Nadu with the Jaffna District in Sri Lanka's Northern Province.

Q11. Answer: (a) B, C

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

Conclusions:

A. All Mass is Space → False (it is possible but not definite)

B. Some Mass is Space → True (As All Matter is Space and Some Mass is Matter so, Some Mass is Space is true)

C. Some Space is Mass → True (As All Matter is Space and Some Mass is Matter so, Some Space is Mass is true)

D. All Space is Mass → False (it is possible but not definite)

E. All Matter is Mass → False (it is possible but not definite)

Therefore Here, Conclusions B and C follow.

Hence, the correct answer is "B, C".

Q12. Answer: (d) Brazil

The correct answer is Brazil.

Key Points

• Brazil is the world's largest coffee producer.

• Brazil produces almost one-third of the world's coffee, with 3,558,000 metric tonnes (7,844,000,000 pounds) produced.

• Coffee beans can be classed into four types: Arabica, Robusta, Liberica, and Excelsa.

• Arabica accounts for 69 percent of Brazilian coffee, while Robusta accounts for the remaining 31 percent.

• The primary growing locations for arabica are on the eastern side of Brazil, from Fortaleza in the north to the border with Uruguay in the south.

• The state of Rondonia, on the border with northern Bolivia, is the largest producer of Robusta.

Important Points

• Vietnam is the world's second-largest producer of coffee. Vietnam accounts for 17% of the world's coffee production, with 1,830,000 metric tonnes (4,034,000,000 pounds) produced.

• Colombia is the world's third-largest producer of coffee. Colombian coffee represents 8% of the world's coffee production, with 858,000 metric tonnes (1,892,000,000 pounds) produced.

• India is a major producer of coffee in Asia. Coffee is produced in India in the amount of 329,100 metric tonnes (726,000,000 pounds). This accounts for 3% of the total world coffee output.

Q13. Answer: (a) 8

Given

First eight odd natural number

Formula used

Mean = Sum of all observation/ Number of observation

Calculation

First eight odd natural numbers are 1, 3, 5, 7, 9, 11, 13 and 15

Mean = (1 + 3 + 5 + 7 + 9 + 11 + 13 + 15)/8

=> Mean = 64/8

=> Mean = 8

Therefore The mean of the first eight odd natural numbers is 8

Q14. Answer: (d) A is true but R is false.

• Assertion (A): Trees grow against gravity. - This is true because trees grow above the earth and upwards.

• Reason (R): Nature defies gravitational law. - This is false because nature follows the gravitational law.

Hence A is true but R is false.

Q15. Answer: (a) 12

Given

Number of bats = 96

Number of balls = 180

Concept

To find the number of players, who will get the equal number of bats and balls. we have to find the HCF

Calculation

HCF of 96 and 180 is 12

i.e. Factors of 96 are 2 × 2 × 2 × 2 × 2 × 3 and factors of 180 are 2 × 2 × 3 × 3 × 5

so, 12 players receive the gifts.

Therefore The greatest number of players receiving the gifts are 12.

Q16. Answer: (d) Indian Opinion

The correct answer is Indian Opinion.

Key Points

• The newspaper Indian Opinion, founded by Mahatma Gandhi and published in Durban, South Africa, was representative of a created imagined nationality.

• The newspaper, which is experimental in the true sense, is frequently described as anti-commodity, copyright-free, and slow-moving.

• It contradicted popular perceptions of what constitutes a "newspaper," which generally comprises news pieces, editorials, reports from outstation reporters, and analyses, among other things.

• Once a week, Indian Opinion was printed in four languages: English, Gujarati, Tamil, and Hindi.

• The current study examines Gandhi's publications in the Indian Opinion from June to December 1903, tracing his concept of an Indian identity that transcends linguistic and religious differences.

• These essays reveal a great deal about his conception of Indianness, both civilizational and geographical.

Important Points

• The Indian Sociologist was an early twentieth-century Indian nationalist publication. An Organ of Freedom and Political, Social, and Religious Reform was its subtitle.

• Commonweal was a socialist journal published in the United Kingdom that was launched in 1885 by the newly formed Socialist League.

• The National Herald is an Indian daily produced by The Associated Journals Ltd and controlled by the Indian National Congress's Young India Limited.

Q17. Answer: (d) All Red is Green

Venn diagram:

Conclusions:

1. Some Green is Grass - Follows (as some grass is green)

2. Some Grass is Red - Follows (as some grass is green and all green is red)

3. Some Grass is Red and Green - Follows (as some grass is green and conclusion 2 also holds)

4. All Red is Green - Does not follow (it is possible but not definite)

Hence, option 4 is the correct answer.

Q18. Answer: (d) 36

The logic followed here is :-

Column 1) :

21

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42
84

Column 2) :

18
?
72

Column 3) :

9
18
36

Hence, the correct answer is "36".

Q19. Answer: (b) Kakori train heist

The correct answer is Kakori train heist.

Key Points

• The Kakori Train Robbery was a train robbery that took place at Kakori, a village near Lucknow, on 9 August 1925 during the Indian Independence Movement against the British Raj. It was organized by Hindustan Republican Association.

• Ram Prasad Bismil, Ashfaqulla Khan, and Roshan Singh were executed for their roles in the Kakori plot.

• For their involvement in the Kakori plot, over 40 persons were arrested and incarcerated.

• However, the principal freedom fighters were hung for a train heist that was significant in the history of India's independence.

• The 19th of December is celebrated as the death anniversary of the three revolutionaries for their valiant actions.

• The Kakori train theft was a plot against the British Empire to enable Indian freedom fighters to attain independence as quickly as feasible. Ram Prasad Bismil had the concept that political machinations had to take place.

Important Points

• The Chittagong armoury attack, also known as the Chittagong revolt, was an attempt by armed Indian independence activists headed by Surya Sen on 18 April 1930 to storm the Chittagong armoury of police and auxiliary troops in the Bengal Presidency of British India.

• The Meerut Conspiracy Case was a controversial court case that was initiated in British Raj in March 1929 and decided in 1933. Several trade unionists, including three Englishmen, were arrested for organizing an Indian railway strike. The British government convicted 27 leftist trade union leaders under a lawsuit.

• From April 26 to September 13, 1915, the 1915 Lahore Conspiracy Case, also known as the First Lahore Conspiracy Case, was a series of trials held in Lahore (then part of British India's undivided Punjab) and the United States in the aftermath of the failed Ghadar conspiracy.

Q20. Answer: (b) 2

Shortcut Trick

Ratio of Amount to Principal = 2116 : 1600 = 529 : 400.

Rate of 15% means the multiplication factor per year is 115/100 = 23/20.

Observe the relationship: $(23/20)^2 = 529/400$.

The exponent (power) directly represents the number of years.

Therefore The correct answer is 2 years.

Alternate Method

Given:

Principal (P) = Rs. 1600

Amount (A) = Rs. 2116

Rate (R) = 15% per annum

Formula Used:

$A = P(1 + R/100)^n$, where n = time in years.

Calculations:

$\Rightarrow 2116 = 1600(1 + 15/100)^n$

=> 2116 / 1600 = $(115/100)^n$

=> 529 / 400 = $(23 / 20)^n$

=> $(23 / 20)^2 = (23 / 20)^n$

=> n = 2

Therefore The correct answer is 2 years.

Additional Information

Compound Interest Formula

Amount (A) = $P(1 + r/100)^n$, where CI = A − P. Interest is calculated on the accumulated principal of previous years.

Difference between CI and SI

For a period of 2 years, the difference between Compound Interest and Simple Interest is given by $P(R/100)^2$.

Effective Rate of Interest

For two successive years at R%, the effective compound interest rate is R + R + (R×R)/100.

Q21. Answer: (a) 0.4545...

The logic followed here is:

1) 0.4545... → 45/99 → Rational number.

2) π = 3.142...→ Irrational number.

3) √3 → Irrational number.

4) 0.120120012000…… - Irrational number.

Therefore Here, 0.4545... is different from the other three alternatives.

Hence, the correct answer is " 0.4545... ".

Q22. Answer: (d) Sri Lanka

The correct answer is BRICS.

Key Points

• Sri Lanka is NOT a member of the BRICS group.

• BRICS is an abbreviation for Brazil, Russia, India, China, and South Africa, which are five important developing economies.

• The members of the BRICS are renowned for having a considerable impact on regional affairs.

• Since 2009, the governments of the BRICS countries have convened in official summits once a year.

• On September 9, 2021, India virtually hosted the 13th BRICS Summit.

• Before South Africa's entrance in 2010, the first four were referred to as "BRIC" (or "the BRICs").

• The first formal summit of the BRIC grouping, also held at Yekaterinburg, began on June 16, 2009, with Luiz Inácio Lula da Silva, Dmitry Medvedev, Manmohan Singh, and Hu Jintao, the leaders of Brazil, Russia, India, and China, all in attendance.

Important Points

• Recently Bangladesh, Egypt, United Arab Emirates (UAE), and Uruguay were added as new members of the BRICS New Development Bank (NDB).

Q23. Answer: (c) $sec^2 15°$

Given

1 + tan 15° cot 75°

Formula used

$sec^2 A - tan^2 A = 1$

cot (90° - A) = tan A

Calculation

1 + tan15° cot(90° - 15°)

=> 1 + tan 15° tan 15°

=> $1 + tan^2 15°$

=> $sec^2 15°$

Therefore 1 + tan 15° cot 75° is $sec^2 15°$.

Q24. Answer: (d) 4/3

Given

A + B = 90° and sin A = 3/5

Concept

sin(90° - A) = cos A

sin2 B + cos2 B = 1

Calculation

sin A = 3/5

A = 90° - B

sin(90° - B) = 3/5

cos B = 3/5

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

$\Rightarrow \sin^2 B = 1 - (3/5)^2$

$\Rightarrow \sin^2 B = 1 - (9/25)$

$\Rightarrow \sin^2 B = (25 - 9)/25$

$\Rightarrow \sin^2 B = 16/25$

$\Rightarrow \sin B = 4/5$

tan B = (4/5)/ (3/5)

=> 4/3

Therefore The value of tan B is 4/3

Q25. Answer: (c) irrational number

Given

(√3 + √11) 2

Formula used

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

Calculation

(√3 + √11) 2

$(\sqrt{3})^2 + (\sqrt{11})^2 + 2 \times (\sqrt{3}) \times (\sqrt{11})$

$\Rightarrow 3 + 11 + 2\sqrt{33}$

$\Rightarrow 14 + 2\sqrt{33}$

$\Rightarrow 2(7 + \sqrt{33})$

√33 is an irrational number.

Therefore $(\sqrt{3} + \sqrt{11})^2$ is an irrational number.

Q26. Answer: (a) 42^(nd)

The correct answer is 42nd.

Key Points

• Articles 39A, 43A, and 48A of the 42nd Amendment were inserted as additional Directive Principles.

• By saying that "no law embodying any of the Directive Principles may be deemed unconstitutional on the grounds that it infringed any of the Fundamental Rights," the 42nd Amendment accorded the Directive Principles precedence.

• Laws forbidding "anti-national actions" or the establishment of "anti-national organisations" could not be declared unlawful because they infringed on any of the Fundamental Rights, according to the Amendment.

• The 42nd Amendment's provision that Directive Principles take precedence over Fundamental Rights was abolished by the 43rd and 44th Amendments, which also limited Parliament's ability to legislate against "anti-national actions."

• The 42nd Amendment also included a new section to the Constitution's Article on "Fundamental Duties."

Important Points

• Arunachal Pradesh was granted statehood via the 55th Amendment, making it the Indian Union's 24th state.

• The 44th Amendment of 1978 removed the right to property from the list of fundamental rights. A new provision, Article 300-A, was added to the constitution, which provided that “no person shall be deprived of his property save by authority of law”.

• The Forty-third Amendment of the Constitution of India, officially known as the Constitution Act, 1977, repealed six articles that had been inserted into the Constitution by the 42nd Amendment which had been enacted by the Indira Gandhi-led Indian National Congress during the Emergency.

Q27. Answer: (c) Johannes Kepler

The correct answer is Johannes Kepler.

Key Points

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• The three laws of Kepler describe how planets circle the Sun.

• They explain how planets travel in elliptical orbits around the Sun, how a planet covers the same amount of space in the same amount of time regardless of where it is in its orbit, and how a planet's orbital period is proportional to its orbital size (its semi-major axis).

• Kepler's rules of planetary motion, published between 1609 and 1619 by Johannes Kepler, define the orbits of planets around the Sun in astronomy.

• The rules altered Nicolaus Copernicus' heliocentric theory, replacing circular orbits and epicycles with elliptical trajectories to describe how planetary velocities fluctuate.

Important Points

• Roger Bacon, also known as Doctor Mirabilis in scholastic circles, was a medieval English philosopher and Franciscan friar who emphasized the study of nature via empiricism.

• Sir Isaac Newton was an English mathematician, physicist, astronomer, alchemist, theologian, and novelist who is largely regarded as one of history's greatest mathematicians and physicists, as well as one of the world's most important scientists. Although Isaac Newton is well known for his discoveries in optics (white light composition) and mathematics (calculus), it is his formulation of the three laws of motion—the basic principles of modern physics—for which he is most famous.

• Galileo was an Italian astronomer, physicist, and engineer from Pisa, then part of the Duchy of Florence, who was sometimes referred to as a polymath. He also made revolutionary telescopic discoveries, including the four largest moons of Jupiter.

Q28. Answer: (a) Bibhutibhushan Bandopadhyay

The correct answer is Bibhutibhushan Bandopadhyay.

Key Points

• Bibhutibhushan Bandyopadhyay's novel Pather Panchali was made into a 1955 Satyajit Ray film of the same name.

• Pather Panchali is widely regarded as one of the most important literary works representing rural life.

• It follows the Roy family from their ancestral home in rural Bengal to Varanasi in quest of a better life, as well as the sorrow and loss they experience along the way.

• In the Bengali language, Bibhutibhushan Bandyopadhyay was an Indian writer.

• Pather Panchali (The Song of the Road), Chander Pahar, and Aranyak are three of his most well-known compositions.

Important Points

• Bankim Chandra Chatterjee also known as Bankim Chandra Chattopadhyay wrote Anandamath, a Bengali language book published in 1882 that is considered a classic of modern Bengali and Indian literature.

• Sarat Chandra Chattopadhyay was an early twentieth-century Bengali novelist and short story writer.

• With Contextual Modernism in the late 19th and early 20th centuries, Rabindranath Tagore altered Bengali literature and music, as well as Indian art. His famous works are Gitanjali, Gitabitan, Kabuliwala, Gora, Stray Birds, The Home and the World, etc.

Q29. Answer: (c) 124 g

Shortcut Trick

If each value in a data set is increased by a constant amount, the average of the set increases by that same amount.

Since each of the 10 apples was 20 g lighter than its actual weight, the average is also 20 g less than the actual average.

Correct Average = Recorded Average + Error per apple

Correct Average = 104 + 20 = 124 g

Therefore The correct answer is 124 g.

Alternate Method

Given:

Number of apples = 10

Observed average weight = 104 g

Weight error per apple = −20 g (under-weighed)

Formula Used:

Total Weight = Average Weight × Number of items

Correct Average = Correct Total Weight ÷ Number of items

Calculations:

=> Total observed weight of 10 apples = 104 × 10 = 1040 g

=> Total weight error = 20 × 10 = 200 g

=> Actual total weight = 1040 + 200 = 1240 g

=> Actual average weight = 1240 ÷ 10 = 124 g

Therefore The correct answer is 124 g.

Additional Information

Effect of Arithmetic Operations on Average

If every observation in a data set is increased, decreased, multiplied, or divided by a constant k, the mean (average) of the data set also increases, decreases, is multiplied, or divided by k respectively.

Correcting the Average Formula

Correct Average = [(Observed Average × n) + (Actual value − Wrong value)] ÷ n. This formula is useful when specific values are misread or miscalculated.

Sum of Observations

The sum of n observations is equal to the product of the average and the number of observations (Sum = Average × n).

Q30. Answer: (d) 3

Given

3/8

Concept

Convert the given fraction into decimal by dividing and then, find the number of digit after decimal

Calculation

3over8 = 0.375

Therefore The decimal expression of 3/8 comes to an end after 3 digits after the decimal.

Q31. Answer: (a) Gotabaya Rajapaksa

The correct answer is Gotabaya Rajapaksa.

Key Points

• Lieutenant Colonel Gotabaya Rajapaksa is a former military commander and current President of Sri Lanka.

• He has been in office since 2019. He previously served as Secretary to the Ministry of Defence and Urban Development under his elder brother, former President Mahinda Rajapaksa, from 2005 to 2015, leading the Sri Lankan Armed Forces to the military defeat of the Tamil Tigers, bringing the Sri Lankan Civil War to a conclusion.

• On November 18, 2019, Rajapaksa was formally inaugurated at the Ruwanwelisaya in Anuradhapura.

• It is Rajapaksa's first elected post, and he is the first non-career politician and former military officer to hold the position of president.

Important Points

• Mahinda Rajapaksa is a Sri Lankan politician who has been the country's Prime Minister since 2019, having previously served from 2004 to 2005.

• Ranil Wickremesinghe is a Sri Lankan politician who represents the United National Party's National List in Parliament.

• Ranil Wickremesinghe is the current President of Sri Lanka (as of July 2022).

• Chandrika Bandaranaike Kumaratunga is a Sri Lankan politician who served as the country's fifth president from November 12, 1994, until November 19, 2005.

Q32. Answer: (a) Sicily

The correct answer is Sicily.

Key Points

• Sicily, the biggest Mediterranean island, is located just off the "toe" of Italy's "boot."

• Its rich past is represented in places such as the Valley of the Temples, which has the well-preserved ruins of seven colossal Doric-style Greek temples, and the Byzantine mosaics at the Cappella Palatina, a former royal church in Palermo.

• Mount Etna, Europe's tallest active volcano, is located on Sicily's eastern border.

• The Mediterranean Sea is a sea connected to the Atlantic Ocean, encircled by the Mediterranean Basin, and almost totally surrounded by land: on the north by Western and Southern Europe and Anatolia, on the south by North Africa, and on the east by the Levant.

Important Points

• Malta is an archipelago in the central Mediterranean, located between Sicily and the coast of North Africa.

• Crete is the biggest and most populated of the Greek islands, ranking 88th in the globe and fifth in the Mediterranean Sea after Sicily, Sardinia, Cyprus, and Corsica.

• Valletta (also Il-Belt) is the capital of Malta, a Mediterranean island republic.

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Q33. Answer: (d) Annie Besant

The correct answer is Annie Besant.

Key Points

• The Congress got its first woman President at the Calcutta Session in 1917: Annie Besant.

• She is better known as Annie Wood. She was a well-known theosophist, feminist activist, author, and orator.

• She co-founded the Home Rule League with Lokmanya Tilak in 1916.

• After delivering a Theosophical lecture in 1926, she was named a World Teacher.

• She built the Central Hindu College in Varanasi in 1898, and it was eventually given to Pandit Madan Mohan Malviya, who changed it into Banaras Hindu University.

Important Points

• Nellie Sengupta was a British-born Indian independence activist. At the Indian National Congress's 48th annual session in Calcutta in 1933, she was elected president.

• In 1959, Indira Gandhi was elected president of the Indian National Congress.

• Saroijni Naidu became the Indian National Congress's first Indian female president in 1925 (Kanpur Session). She also became the second woman to preside over the Congress after Annie Besant.

Q34. Answer: (b) AHPYRNE

The logic followed here is:

STUDFARM is written as FGHQSNEZ.

• Similarly, NUCLEAR will be written as :

• Hence, the correct answer is "AHPYRNE".

Q35. Answer: (b) 5Y

The logic followed here is :-

Hence, the correct answer is "5Y".

Q36. Answer: (c) x(x + 1) + 8 = (x + 2) (x ? 2)

Concept

Quadratic equation is the equation in which highest degree of the variable is 2.Quadratic equation is written as $ax^2 + bx + c = 0$.

Calculation

$x(x + 1) + 8 = (x + 2) (x ? 2)$

$\Rightarrow x(x + 1) + 8 = x^2 - 4$

$\Rightarrow x^2 + x + 8 = x^2 - 4$

$\Rightarrow x = -4 - 8$

$\Rightarrow x = - 12$

In the equation power of x is not 2. so, $x(x + 1) + 8 = (x + 2) (x - 2)$ not a quadratic equation.

Q37. Answer: (c) Dennis Ritchie

The correct answer is Dennis Ritchie.

Key Points

• C programming is a general-purpose, procedural, imperative computer programming language created by Dennis M. Ritchie at Bell Telephone Laboratories in 1972 to help build the UNIX operating system.

• The most extensively used computer language is C. Dennis Ritchie created C, a successor to the programming language B, at Bell Labs between 1972 and 1973 to build tools that ran on Unix.

• It was used to re-implement the Unix operating system's kernel.

• Dennis MacAlistair Ritchie was a computer scientist from the United States.

• He designed the C programming language, as well as the Unix operating system and the B programming language, alongside long-time collaborator Ken Thompson.

Additional Information

• William Henry Gates III (Bill Gates) is a business entrepreneur, software developer, investor, author, and philanthropist from the United States. He and his late boyhood buddy Paul Allen co-founded Microsoft.

• Yashavant Kanetkar is a computer science author from India well known for his publications on programming languages. He has written multiple books on programming in C, C++, VC++, C#,.NET, DirectX, and COM.

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Q38. Answer: (d) Quantum

The correct answer is quantum.

Key Points

• Quantum computing is a sort of computer that uses the collective features of quantum states to accomplish computations, such as superposition, interference, and entanglement. Quantum computers are machines that do quantum calculations.

• Microsoft Office 2010 is a version of Microsoft Office for Microsoft Windows that was released to production on April 15, 2010 and to public availability on June 15, 2010 as the successor to Office 2007 and the precursor to Office 2013.

• WPS Office is a Microsoft Windows, macOS, Linux, iOS, Android, and HarmonyOS office suite created by Zhuhai-based Chinese software company Kingsoft.

• The Document Foundation's LibreOffice is a free and open-source office productivity software package.

• It was forked in 2010 from OpenOffice.org, an open-source derivative of the previous StarOffice.

• Microsoft Office, or simply Office, is a family of client software, server software, and services developed by Microsoft. It was first announced by Bill Gates on August 1, 1988, at COMDEX in Las Vegas.

Q39. Answer: (c) New Deal

The correct answer is New deal.

Key Points

• The New Deal was a series of programs, public work projects, financial reforms, and regulations enacted by President Franklin D. Roosevelt in the United States between 1933 and 1939.

Important Points

• The Wavell Plan is a plan proposed by the British government to end the impasse in India.

• Lord Wavell, who succeeded Lord Linlithgow as Viceroy of India in 1943, drafted this plan.

• The Cripps Mission was an unsuccessful attempt by the British government in late March 1942 to win complete Indian collaboration and support for their World War II activities. Sir Stafford Cripps, a senior politician, led the mission.

• The Indian Statutory Commission, commonly known as the Simon Commission, was a panel of seven Members of Parliament led by Sir John Simon. The commission arrived in British India in 1928 to study constitutional reform in Britain's largest and most important possession.

Q40. Answer: (b) Tarang Sancharwith

The correct answer is Tarang Sanchar.

Key Points

• Tarang Sanchar, a web portal for information sharing on mobile towers and EMF Emission Compliances, has been launched by the Department of Telecom (DoT), Ministry of Communications, with the goal of generating confidence and conviction about the safety and harmlessness of mobile towers, as well as dispelling myths and misconceptions.

• The EMF Portal provides a public interface with a simple map-based search tool for seeing mobile towers in the neighbourhood of any location.

• Anyone may request an EMF emission measurement at a site by paying a small cost of Rs. 4000/- online.

• The test will be conducted by the DoT's Local Telecom Enforcement Resource and Monitoring (TERM) filed unit (the requestor may be present if he so wishes), and test reports will be supplied.

Important Points

• Tarang Sanchar is a web portal for exchanging information about Mobile Towers and Electromagnetic Frequency (EMF) Emission Compliance.

Q41. Answer: (a) China

The correct answer is China.

Key Points

• The Taklamakan Desert is a desert in Northwest China's southwestern Xinjiang province.

• It is limited to the south by the Kunlun Mountains, to the west by the Pamir Mountains, to the north by the Tian Shan range, and to the east by the Gobi Desert.

• The Taklamakan Desert covers 337,000 square kilometres, making it somewhat smaller than Germany.

• It is part of the Tarim Basin, which is 1,000 kilometres (620 miles) long and 400 kilometres (250 miles) broad.

• It is traversed by two branches of the Silk Road at its northern and southern edges, as travellers attempted to escape the parched wasteland.

Additional Information

• China:

• Capital: Beijing
• Largest city: Shanghai
• President: Xi Jinping

Q42. Answer: (a) an irrational number

Given:

√2 and √3

Concept:

√a × √b = √ab

An irrational number is a number which is non terminating and non repeating decimal number.

Calculation:

The product of √2 and √3 is √6.

√6 = 2.4494....

This extended value shows that √6 is an non terminating and non repeating decimal number.

so,√6 is an irrational number.

Therefore √6 is an irrational number.

Q43. Answer: (d) Shaktikanta Das

The correct answer is Shaktikanta Das.

Key Points

• Shaktikanta Das is a Tamil Nadu cadre retired Indian Administrative Service (IAS) officer from the 1980 batch.

• He was a member of the Fifteenth Finance Commission and India's Sherpa to the G20 before becoming the 25th governor of the Reserve Bank of India (RBI).

• Das worked for the Indian and Tamil Nadu governments in various roles as an IAS officer, including as Economic Affairs Secretary, Revenue Secretary, and Fertilizers Secretary.

• He has also served as India's Alternate Governor at the World Bank, the Asian Development Bank, the National Development Bank, and the Asian Infrastructure Investment Bank.

Important Points

• Raghuram Rajan served as the Reserve Bank of India's 23rd Governor from September 2013 to September 2016, and he also served as Vice-Chairman of the Bank for International Settlements in 2015.

• Urjit Patel succeeded Raghuram Rajan as the 24th governor of the Reserve Bank of India, serving from 2016 to 2018.

• Arvind Subramanian is an Indian economist who served as the Government of India's Chief Economic Advisor from 16 October 2014 to 20 June 2018.

Q44. Answer: (a) CFBCA

The logic followed here is :-

STORMY is written as ABFIDG.

Similarly,

LOTUS will be written as :

Hence, the correct answer is "CFBCA".

Q45. Answer: (b) a rational number

Given

0.2323...

Concept

Rational numbers are in the form of p/q, where p and q can be any integer and q ≠ 0. This means that rational numbers include natural numbers, whole numbers, integers, fractions of integers, and decimals (terminating decimals and recurring decimals).

Calculation

0.2323... is writtren as 0.232323.....

so, this number is an recurring nature.

its a rational number.

Therefore 0.2323... is a rational number.

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Q46. Answer: (a) 96 marks

Given

Rakhi scored = Mohan marks scored + 12

and Rakhi scored 54% of 200.

Calculation

Let the marks scored by Mohan is x

marks scored by Rakhi = x + 12 ---- (1)

Marks scored by Rakhi = 54% of 200

=> 108 ---- (2)

From 1 and 2

=> x + 12 = 108

=> x = 108 - 12

=> x = 96

Therefore Mohan scored 96 marks.

Q47. Answer: (b) C. Linnaeus

The correct answer is C. Linnaeus.

Key Points

• From the 1730s until the 1750s, Carl Linnaeus devised modern zoological taxonomy.

• In 1758, he defined the human species Homo sapiens, as the genus Homo's solitary member species, separated into various subspecies corresponding to the great races.

• "Human being" is the meaning of the Latin noun hom (genitive hominis).

• Humans (Homo sapiens) are the most common and widespread primate species, with huge, complex brains and bipedalism.

• Advanced tools, culture, and language have all resulted as a result of this. Humans are highly social beings who live in complex social systems made up of a variety of cooperating and competing groupings, ranging from families and kinship networks to political states.

Important Points

• Carl Linnaeus, a Swedish botanist, biologist, taxonomist, and physician, is credited with establishing binomial nomenclature, the contemporary way of naming species.

• Gregor Mendel was an Augustinian prelate, botanist, teacher, and Augustinian prelate who was the first to build the mathematical foundations of genetics in what became known as Mendelism.

• Stanley Lloyd Miller was an American scientist who pioneered the study of the genesis of life by proving that a wide range of essential organic chemicals may be created from inorganic materials using very basic chemical methods.

• Charles Robert Darwin was an English naturalist, geologist, and biologist best known for his work on evolution.

Q48. Answer: (b) 9960

Given

A four digit number.

Concept

Divide the largest 4 digit number by 83, then subtract the remainder from the largest 4 digit number. To get a number that is exactly divisible by 83.

Calculation

The largest 4 digit number is 9999.

when 9999 is divided by 83, then the remainder is 39.

So, the largest 4 digit number which is exactly divisible by 83 is 9960 i.e. (9999 - 39)

Therefore The largest four-digit number that is exactly divisible by 83 is 9960

Q49. Answer: (c) 8

The number of triangles in given figure is as shown below :

Therefore Here, there are 8 triangles in given figure.

Hence, the correct answer is "8".

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Q50. Answer: (d) Rajendra Prasad

The correct answer is Rajendra Prasad.

Key Points

• Rajendra Prasad was the writer of India Divided. The book was written to oppose the division of the country.

• Rajendra Prasad was the first president of India, serving from 1950 to 1962. He was a lawyer, scholar, and politician.

• He became a significant leader in the Bihar and Maharashtra regions of the Indian National Congress during the Indian Independence Movement.

Important Points

• Mulk Raj Anand was an English-language Indian author who is most known for portraying the lives of the lower castes in traditional Indian society.

• During British India, Chaudhry Khaliquzzaman was a Pakistani politician and a prominent Muslim personality.

• In 1956, Khushwant Singh was inspired by his experiences during India's 1947 partition to create Train to Pakistan, which became his best-known novel.

Q51. Answer: (c) Dr. Rajendra Prasad

The correct answer is Dr. Rajendra Prasad.

Key Points

• Dr. Rajendra Prasad was the first president of India, serving from 1950 to 1962.

• He was a lawyer, scholar, and politician. He became a significant leader in the Bihar and Maharashtra regions of the Indian National Congress during the Indian Independence Movement.

• During the Salt Satyagraha of 1930 and the Quit India campaign of 1942, British authorities imprisoned Prasad, a devotee of Mahatma Gandhi.

• Prasad became Minister of Food and Agriculture in the federal government after the constituent assembly elections in 1946.

• Prasad was chosen as President of the Constituent Assembly of India, which drafted the Indian Constitution and served as the country's provisional Parliament when the country gained independence in 1947.

Important Points

• The Constituent Assembly of India, which was constituted by representatives of provincial assemblies elected by the Indian people, drafted the Constitution. President of the Constituent Assembly for the first time was Dr. Sachidanand Sinha.

• Dr. Rajendra Prasad was later chosen president of the organization.

• Dr. BR Ambedkar, the chairman of the Constitution's Drafting Committee, is widely regarded as the chief architect of the Indian Constitution, which provides a comprehensive and dynamic framework for guiding and governing the country while taking into account the country's unique social, cultural, and religious diversity.

• Chakravarti Rajagopalachari, popularly known as Rajaji or C.R., also known as Mootharignar Rajaji, was an Indian statesman, writer, lawyer, and independence activist. Rajagopalachari was the last Governor-General of India, as India became a republic in 1950.

• Acharya Narendra Dev was one of the leading theorists of the Congress Socialist Party in India. His democratic socialism renounced violent means as a matter of principle and embraced the satyagraha as a revolutionary tactic.

Q52. Answer: (a) 2

Given

mean = (3 median – mode)/p

Concept

Mode = 3 Median - 2 Mean

Calculation

3 Median - 2 Mean = Mode

=> 3 Median - Mode = 2 Mean

=> (3 Medain - Mode)/2 = Mean

=> p = 2

Therefore The value of p is 2.

Q53. Answer: (c) Los Banos

The correct answer is Los Banos.

Key Points

• The International Rice Research Institute (IRRI) is a global agricultural research and training organisation with offices in seventeen countries and headquarters in Los Banos, Laguna, Philippines.

• IRRI is well-known for its role in producing rice varieties that contributed to the 1960s Green Revolution, which helped Asia avoid starvation.

• The Institute was founded in 1960 with the goal of reducing poverty and hunger, improving the health of rice farmers and consumers, and ensuring rice farming's environmental sustainability.

• It accomplishes its objective by collaborating on research, forming partnerships, and boosting the national agricultural research and extension systems of the countries in which it operates.

Additional Information

• Los Banos, or the Municipality of Los Banos, is a first-class municipality in the Philippines' province of Laguna.

• It has a population of 115,353 people, according to the 2020 census.

• It is bounded on the south and south-west by Mount Makiling, on the north by Laguna de Bay, on the north-west by Calamba, and on the east by the town of Bay. It has a total land area of 56.5 square kilometres.

• Indian Institute of Rice Research formerly Directorate of Rice Research or IIRR is a rice research institute located in Rajendranagar near Hyderabad, Telangana.

Q54. Answer: (d) Rs. 310

Given

New bill amount = Rs. 279

Concept

Subtract the decrease% of bill from the original amount of bill

Calculation

Let the original amount of bill is Rs.x

Decreased % = 10

New decreased bill amount = x - 10% of x

=> 90% of x = 279

=> x = (279 × 100)/90

=> x = 310

Therefore The original bill was Rs.310

Q55. Answer: (a) 5832 cm^3

Shortcut Trick

Side of cube (a) = √(Total Surface Area ÷ 6)

=> a = √(1944 ÷ 6) = √324 = 18 cm

=> Volume = $a^3 = 18^3 = 5832$ cm^3

Therefore The correct answer is 5832 cm^3.

Alternate Method

Given: Total Surface Area of the cube = 1944 cm^2

Formula Used:

1. Total Surface Area (TSA) = 6 × $(side)^2$

2. Volume = $(side)^3$

Calculations:

=> 6 × a^2 = 1944

=> a^2 = 1944 ÷ 6

=> a^2 = 324

=> a = √324 = 18 cm

=> Volume of cube = $a^3 = 18 \times 18 \times 18$

=> Volume = 324 × 18 = 5832 cm^3

Therefore The correct answer is 5832 cm^3.

Additional Information

Diagonal of a Cube

The space diagonal of a cube represents the longest line segment connecting two opposite vertices, calculated as $d = a\sqrt{3}$.

Lateral Surface Area (LSA)

The area of the four side faces of the cube (excluding the top and bottom) is given by LSA = $4a^2$.

Volume of a Cuboid

If all sides are not equal, the volume is the product of its three dimensions: Volume = Length × Breadth × Height.

Q56. Answer: (d) G V Mavalankar

The correct answer is G V Mavalankar.

Key Points

• Ganesh Vasudev Mavalankar, who was representing Ahmedabad for the Congress, was chosen Speaker of the first Lok Sabha on May 15, 1952, following the first general elections in independent India.

• Ganesh Vasudev Mavalankar, often known as Dadasaheb, was an Indian independence leader who served as President of the Central Legislative Assembly (from 1946 to 1947), Speaker of the Constituent Assembly, and ultimately the first Speaker of the Lok Sabha, India's lower house of Parliament.

• Purushottam Mavalankar, his son, was elected thrice to the Lok Sabha from Gujarat.

Important Points

• Rajendra Prasad was the first president of India, serving from 1950 to 1962.

• Purushottam Das Tandon is best known for his opposition to India's partition and efforts to make Hindi an official language of the country.

• Hukum Singh was an Indian politician who served as the Member of Parliament from Kairana in Uttar Pradesh as a Bharatiya Janata Party candidate

Q57. Answer: (d) ZTMS

The logic followed here is :-

Horse are Cat – XYT

Cat is Blue – TMZ

Blue is Cloud – ZMS

Therefore Here, Blue Cat is Cloud is coded as 'ZTMS'.

Hence, the correct answer is "ZTMS".

Q58. Answer: (d) -2

Given

$(\sqrt{7} + \sqrt{9})(\sqrt{7} - \sqrt{9})$

Concept

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

Calculation

$(\sqrt{7} + \sqrt{9})(\sqrt{7} - \sqrt{9})$

$(\sqrt{7})^2 - (\sqrt{9})^2$

$\Rightarrow 7 - 9$

$\Rightarrow -2$

Therefore The value of $(\sqrt{7} + \sqrt{9})(\sqrt{7} - \sqrt{9})$ is -2.

Q59. Answer: (d) Internet

The correct answer is Internet.

Key Points

• A supernetwork, sometimes known as a supernet, is an Internet Protocol (IP) network created by combining numerous networks (or subnets) into a single bigger network.

• The integrated network's new routing prefix encapsulates the constituent networks in a single routing table entry.

• Supernetting, prefix aggregation, route aggregation, or route summarization are all terms used to describe the process of creating a supernet.

Important Points

• The Internet is a global network of interconnected computer networks that communicate with one another using the Internet protocol suite (TCP/IP).

• A server is a programme or equipment that delivers a service to another programme and its user, also known as the client.

• A metropolitan area network (MAN) is a computer network that connects computers in a metropolitan region, which can be a single large metropolis, a collection of cities and towns, or any significant area with several buildings.

• A local area network (LAN) is a computer network that links computers in a certain geographic region, such as a home, school, laboratory, university campus, or office building.

Q60. Answer: (d) 100

Given

16 and 40

Concept

The third proportional of two numbers say m and n is defined to be that number p such that m : n = n : p. p is the third proportion.

Calculation

Let the third proportional be x

16 : 40 = 40 : x

=> 16x = 40 × 40

=> x = (40 × 40)/16

=> x = 100

Therefore the Third proportional to 16 and 40 is 100.

Q61. Answer: (d) George Fernandes

The correct answer is George Fernandes.

Key Points

• In two civil investiture ceremonies held at the Rashtrapati Bhavan, former Union ministers George Fernandes, Arun Jaitley, and Sushma Swaraj, as well as former President of Mauritius Anerood Jugnauth, were posthumously awarded the Padma Vibhushan for their outstanding and distinguished service.

• For the years 2020 and 2021, seven Padma Vibhushan awards, sixteen Padma Bhushan awards, and 122 Padma Shri awards were given out.

• The Padma awards are presented in three categories: Padma Vibhushan, Padma Bhushan, and Padma Shri, and are announced on the eve of Republic Day each year.

Important Points

• George Mathew Fernandes was the 22nd Defence Minister of India, serving from 1998 to 2004.

• Bachendri Pal is an Indian mountaineer who made history by becoming the first Indian woman to summit Mount Everest in 1984.

• S. Nambi Narayanan worked at the Indian Space Research Organisation as an aerospace engineer.

• Mohanlal Viswanathan is an Indian actor, film producer, playback singer, television personality, and film distributor who is most known for his work in Malayalam films, though he has also acted in Tamil, Telugu, Kannada, and Hindi films.

Q62. Answer: (a) Photoelectric Effect

The correct answer is Photoelectric Effect.

Key Points

• Albert Einstein was given the Nobel Prize in Physics in 1921 "for his services to theoretical physics, particularly for his discovery of the photoelectric effect law."

• One year later, in 1922, Albert Einstein was awarded the Nobel Prize.

• The Nobel Committee for Physics ruled during the 1921 selection process that none of the nominees satisfied the requirements set in Alfred Nobel's bequest.

• The Nobel Prize can be reserved until the next year, according to the Nobel Foundation's regulations, and this statute was followed.

• As a result, Albert Einstein was awarded the Nobel Prize for Physics in 1922, a year after winning the prize in 1921.

Important Points

• When electromagnetic radiation, such as light, strikes a substance, electrons are emitted. Photoelectrons are electrons that are emitted in this manner.

• The process through which an unstable atomic nucleus loses energy by radiation is known as radioactive decay.

• The Doppler effect is defined as a change in frequency of a wave as a result of a moving observer relative to the wave source.

• The theory of relativity usually refers to two connected ideas devised and published by Albert Einstein in 1905 and 1915, respectively: special relativity and general relativity. In the absence of gravity, special relativity applies to all physical events.

Q63. Answer: (d) Atal Pension Yojana

The correct answer is Atal Pension Yojana.

Key Points

• The government started the Atal Pension Yojana (APY) in June 2015 with the goal of creating a universal social security system by providing/offering guaranteed plans to all citizens, particularly the poor, underprivileged, and unorganised sector employees.

• The APY is administered by the Pension Fund Regulatory and Development Authority (PFRDA).

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• In the event of the subscriber's death, the scheme provides a guaranteed pension to the subscriber's spouse, as well as the restoration of the accumulated pension asset to the nominee.

Important Points

• The Pradhan Mantri Suraksha Bima Yojana (PMSBY) Scheme is open to persons between the ages of 18 and 70 who have a bank account and agree to join/enable auto-debit on or before May 31st for the coverage period of 1 June to 31 May on an annual renewal basis.

• In India, the Pradhan Mantri Jeevan Jyoti Bima Yojana is a government-sponsored life insurance programme.

• The Pradhan Mantri Jan Dhan Yojana is a government of India financial inclusion programme that aims to increase affordable access to financial services such as bank accounts, remittances, credit, insurance, and pensions for Indian residents.

Q64. Answer: (c) Golden Quadrilateral

The correct answer is Golden Quadrilateral.

Key Points

• The Golden Quadrilateral is a national highway system in India that connects most of the country's major economic, agricultural, and cultural centres.

• It forms a quadrilateral that connects India's four largest metro cities: Delhi (north), Kolkata (East), Mumbai (west), and Chennai (central) (south).

• The main goal of these super roads is to cut travel time and distance between India's four megacities.

• The project was planned in 1999 and launched in 2001.

• The National Highways Authority of India (NHAI), which is part of the Ministry of Road, Transport, and Highways, oversees the Golden Quadrilateral project.

• Although safety elements like guardrails, shoulders and high-visibility signage are used, the vast majority of the system is not access restricted.

Important Points

• The Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is a job-guarantee programme in India that was enacted into law on August 25, 2005.

• Adult members of any rural household willing to conduct public work-related unskilled manual work at the statutory minimum salary of Rs. 120 are legally guaranteed one hundred days of employment every financial year under the scheme.

• This legislation was enacted with the goal of increasing rural people's purchasing power by providing largely semi- or un-skilled work to those living in rural India, whether or not they are poor.

• The law was formerly known as the National Rural Employment Guarantee Act (NREGA), but on October 2, 2009, it was renamed.

• The National Rural Health Mission (NRHM) was established on April 12, 2005, with the goal of providing rural populations, particularly vulnerable groups, with accessible, cheap, and high-quality health care.

Q65. Answer: (a) Kandla

The correct answer is Kandla.

Key Points

• Kandla, currently officially known as the Deendayal Port Authority, is a seaport and town in Gujarat's Kutch district, close to Gandhidham.

• It is one of India's major west coast ports, located on the Gulf of Kutch.

• It's roughly 256 nautical miles southeast of Pakistan's Karachi Port and 430 nautical miles north-northwest of Mumbai's Port.

• Kandla Port was built in the 1950s to serve as the main seaport for western India.

Important Points

• Between the Eastern Ghats and the Bay of Bengal lies the Eastern Coastal Plains, a large area of Indian territory.

• Paradip Port is a natural, deep-water port on India's east coast, located in Paradip, Odisha, about 53 kilometres from Jagatsinghpur city.

• V.O. Chidambaranar Port Authority, formerly called Tuticorin Port Trust, is a port in Thoothukudi, Tamil Nadu, and is one of the 13 major ports in India. It was declared to be a major port on 11 July 1974. It is the second largest port in Tamil Nadu and third-largest container terminal in India. V.O. Chidambaranar Port is an artificial port.

• Haldia port or Haldia Dock Complex has been built at the meeting place of the Haldi River and Hooghly river. Kolkata Port Trust has been created in this port as the port's partner. So it is not a port. It is an official dock complex.

Q66. Answer: (c) Mexico

The correct answer is Mexico.

Key Points

• The Gulf Stream is a strong ocean stream that transports warm water from the Gulf of Mexico to the Atlantic.

• It runs the length of the United States and Canada's eastern coasts.

• The Gulf Stream is created by an oceanic gyre, which is a huge system of circular currents and intense winds. On Earth, there are five oceanic gyres.

• The North Atlantic Subtropical Gyre includes the Gulf Stream. The ocean is always in motion, with currents transporting water from one location to another.

• Warm water from the Gulf of Mexico is carried all the way up to the Norwegian Sea by the Gulf Stream.

Additional Information

• Mexico:

• Capital and largest city: Mexico City

• National: language Spanish

• President: Andrés Manuel López Obrador

Q67. Answer: (a) m + 7

Given

m + 3, m + 5, m + 6, m + 9 and m + 12

Formula used

Mean = Sum of all observation/Number of observation

Calculation

Mean = [(m + 3) + (m + 5) + (m + 6) + (m + 9) + (m + 12)]/5

=> Mean = (5m + 35)/5

=> Mean = 5(m + 7)/5

=> Mean = m + 7

Therefore The mean of m + 3, m + 5, m + 6, m + 9 and m + 12 is m + 7

Q68. Answer: (c) 22/5

Given

√ 5 and √7

Concept

Rational numbers are those numbers which are either terminating, non terminating or recurring.

Calculation

√5 = 2.236 and √7 = 2.64

rational number lies between the 2.33... and 2.64...

so, only 22/5 is the number which lies between 2.236 and 2.64

Therefore 22/5 is a rational number between √5 and √7

Q69. Answer: (a) Aryabhata

The correct answer is Aryabhata.

Key Points

• India's first satellite, Aryabhata, was named after the legendary Indian astronomer.

• It was launched on April 19, 1975, utilizing a Kosmos-3M launch vehicle from Kapustin Yar, a Soviet rocket launch and development site in Astrakhan Oblast.

• It was manufactured by ISRO and launched by the Soviet Union as part of the Soviet Interkosmos program, which allowed friendly countries access to space.

• The Indian Space Research Organisation constructed it (ISRO).

Important Points

• The launch was made possible by a 1972 agreement between India and the Soviet Union, which was supervised by UR Rao.

• In exchange for the launch of several Indian satellites, the USSR was authorised to utilise Indian ports for tracking ships and launching vessels.

• Between 1976 and 1997, the image of the satellite appeared on the reverse of Indian two-rupee banknotes.

• The Indian Space Research Organisation is the national space agency of India, headquartered in Bengaluru. It operates under the Department of Space which is directly overseen by the Prime Minister of India, while Chairman of ISRO acts as executive of DOS as well.

• Founder: Vikram Sarabhai

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• Founded: 15 August 1969

• Current Chairman - S. Somanath (10^(th)) (As of 25 April 2022)

Q70. Answer: (a) 8100

Given

16x4 + 25y2 – 40x2y at x = 5 and y = 2

Formula used

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

Calculation

16x4 + 25y2 – 40x2y

$=>(4x^2)^2 + (5y)^2 - 2 \times 4x^2 \times 5y$

$=> (4x^2 - 5y)^2$

Put x = 5 and y = 2

$(4 \times 5^2 - 5 \times 2)^2$

$=> (4 \times 25 - 10)^2$

$=> (100 - 10)^2$

$=> 90^2$

=> 8100

Therefore The value of 16x4 + 25y2 – 40x2y is 8100.

Q71. Answer: (d) 462 cm²

Given

Radii of two concentric circle = 14 cm and 7 cm

Formula used

Area of ring = $\pi(R^2 - r^2)$

where R and r are outer circle ind inner circle radii.

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

Calculation

Area of ring shaped region = $\pi(R^2 - r^2)$

$=> (22/7) \times (14^2 - 7^2)$

$=> (22/7) \times (14 - 7) \times (14 + 7)$

$=> (22/7) \times 7 \times 21$

$=> 22 \times 21$

=> 462 cm²

Therefore The area of the ring-shaped region enclosed between two concentric circles of radii 14 cm and 7 cm will be 462 cm².

Q72. Answer: (d) Amitabh Kant

The correct answer is Amitabh Kant.

Key Points

• Amitabh Kant is the NITI Aayog's, Chief Executive Officer. He is a member of the Kerala cadre of the Indian Administrative Service from the 1980 batch.

• He edited "The Path Ahead: Transformative Ideas for India" and wrote "Branding India: An Incredible Story" (2009) and "Incredible India 2.0: Synergies of Growth and Governance (2019)".

• Kant was also the Chairman of the Government of India's Empowered Committee on the Transformation of Aspirational Districts Program, which was inaugurated by Prime Minister Narendra Modi in 2018.

• Apolitical, a worldwide government learning platform, named Kant as one of the world's 50 most significant persons redefining governance.

Important Points

• The NITI Aayog is the Government of India's premier public policy think tank and the nodal organization tasked with stimulating economic development and building cooperative federalism through the bottom-up involvement of State Governments in the economic policy-making process.

• Its initiatives include the "15-year road map," "7-year vision, strategy, and action plan," AMRUT, Digital India, Atal Innovation Mission, Medical Education Reform, agriculture reforms (Model Land Leasing Law, Agricultural Produce Marketing Committee Act Reforms, Agricultural Marketing and Farmer Friendly Reforms Index for ranking states), Indices Measuring States' Performance in

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Health, Education, and Water Management, and Indices Measuring States' Performance in Health, Education, and Water Management.

Additional Information

• Arvind Panagariya is an Indian-American economist and a professor of economics at Columbia University. From January 2015 to August 2017, he was the first vice-chairman of the government of India think-tank NITI Aayog.

• Suman Bery is the current vice-chairperson of the NITI Aayog.

• Currently, Parameswaran Iyer is the CEO of NITI Aayog appointed in June 2022.

Q73. Answer: (b) Submarine

The logic followed here is:

A battle tank used in the American army was known as Rhinoceros.

Similarly,

A Submarine which is used by American Navy is known as Shark.

Hence, the correct answer is "Submarine".

Q74. Answer: (a) Edwin Lutyens

The correct answer is Edwin Lutyens.

Key Points

• Sir Edwin Lutyens, an Englishman who constructed various other war memorials and was also the chief planner of New Delhi, was the architect.

• The duke of Connaught, Queen Victoria's third son, lay the cornerstone in 1921.

• The construction of the All-India War Memorial, as it was originally known, lasted until 1931, the year New Delhi was formally designated as India's capital.

Important Points

• Sir Edwin Landseer Lutyens was an English architect who was noted for altering classic architectural styles to meet the needs of his day.

• Le Corbusier was a Swiss-French architect, designer, painter, urban planner, and writer who is widely considered one of the forefathers of modern architecture. Chandigarh, the dream city of India's first Prime Minister, Sh. Jawahar Lal Nehru was planned by Le Corbusier.

• Albert Speer was a German architect who served as Nazi Germany's Minister of Armaments and War Production throughout the majority of WWII.

• Lawrence Wilfred "Laurie" Baker was a British-born Indian architect who was known for pioneering cost-effective, energy-efficient architecture and designs that maximized space, ventilation, and light while maintaining a clean, striking aesthetic sensibility.

Q75. Answer: (c) 1 min

Given

Train length = 400 m

Speed of train = 60 km/h

Formula

Time = Distance/Speed

1 Km = 1000 m

1 hr = 60 min

Calculation

Total distance = 400 m + 600 m

=> 1000 m

Speed = (60 × 1000)/60

=> 1000 m/min

Time = 1000/1000

=> 1 min

Therefore 1 min will a train take to cross at 600 m long bridge.

Q76. Answer: (c) Ujjwala

The correct answer is Ujjwala.

Key Points

• The Pradhan Mantri Ujjwala Yojana is a scheme run by the Ministry of Petroleum and Natural Gas that aims to link women from

BPL households to LPG.

• On May 1, 2016, the initiative was introduced in Ballia, Uttar Pradesh.

• The scheme's goal was to provide 8 million LPG connections to low-income families by March 2020.

• Provision has been included in the Union Budget for FY 21-22 for the release of an additional 1 crore LPG connections under the PMUY scheme.

• Migrant families have been given particular treatment throughout this era.

Important Points

• LPG cylinders have been widely distributed in urban and semi-urban regions, with coverage primarily among the middle and upper classes.

• Cooking using fossil fuels, on the other hand, has substantial health risks. According to WHO estimates, dirty cooking fuels are responsible for nearly 5 lakh deaths in India alone.

• Providing LPG connections to BPL families will ensure that everyone in the country has access to cooking gas.

• Women will be empowered and their health will be protected as a result of this measure. It will cut down on drudgery and cooking time. It will also generate jobs for rural kids in the cooking gas supply chain.

Q77. Answer: (d) Some Pens are Pencils

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

Options :

1) All Pens are Pencils → False (it is possible but not definite)

2) All Pencils are Inks → False (it is possible but not definite)

3) Some Inks are only Pencils → False (As Some Inks are Pencils so, Some Inks are only Pencils is false)

4) Some Pens are Pencils → True (As All Pencils are Pens so, Some Pens are Pencils is true)

Therefore Here, Some Pens are Pencils is implicit from given statements.

Hence, the correct answer is "Some Pens are Pencils".

Q78. Answer: (d) Charles Darwin

The correct answer is Charles Darwin.

Key Points

• The Galapagos Islands is a volcanic archipelago in the Pacific Ocean. It's considered one of the world's foremost destinations for wildlife viewing.

• A province of Ecuador, it lies about 1,000 km off its coast. Its isolated terrain shelters a diversity of plant and animal species, many found nowhere else.

• Charles Darwin visited in 1835, and his observation of Galapagos species later inspired his theory of evolution.

• During the second voyage of the HMS Beagle, Charles Darwin researched a huge number of indigenous species on the Galapagos Islands. Charles Darwin backed up the idea that mutations occur throughout time.

• Finches' beaks have astonishing variety, according to Charles Darwin. These finches were born in one place but spread to the other. The Galapagos finches, sometimes known as Darwin's finches, are a group of roughly fifteen species of passerine birds.

• The Geospizinae subfamily is frequently used to classify them. Which bird family the passerine birds belong to is yet unknown.

• Darwin discovered endemic species in the Galapagos islands, including passerine birds.

Important Points

• Charles Robert Darwin was an English naturalist, geologist, and biologist best known for his work on evolution.

• Carl Linnaeus, also known as Carl von Linné following his ennoblement, was a Swedish botanist, zoologist, taxonomist, and physician who helped to establish binomial nomenclature, the modern way of identifying species.

• Ernst Haeckel discovered, characterised, and named thousands of new species, built a genealogical tree connecting all life forms, and linked several biological words such as ecology, phylum, phylogeny, and Protista. He was a strong proponent of Darwinism and proposed new notions of the evolutionary descent of human beings.

• Gregor Johann Mendel was an Augustinian monk and abbot of St. Thomas' Abbey in Brünn (Brno), Margraviate of Moravia. He was a meteorologist, mathematician, biologist, and Augustinian friar. Through his careful breeding of garden peas, Gregor Mendel discovered the basic principles of heredity and laid the mathematical foundation of the science of genetics.

Q79. Answer: (b) 2

Given

The HCF of 51 and 85 is expressed in the form of 51 m – 85

Concept

HCF is highest common factor among the given numbers.For example, numbers are 10 and 15. Then HCF is 5 because 5 is the

common factor of 10 and 15. and it is the highest also.
Calculation
HCF of 51 and 85 is 17.
i.e. factors of 51 are 3 × 17
and factors of 85 are 5 × 17. so, highest common factor is 17
According to question
51m - 85 = 17
=> 51m = 17 + 85
=> 51m = 102
=> m = 2
Therefore The value of m is 2.

Q80. Answer: (a) 0.25% decrease

Given
A number is first decreased by 5% and then increased by 5%
Formula used
Net change % = (net change/original Value) × 100
Calculation
Let the number is 100
Decreased by 5%
Decreased number is 95
then, increased by 5%.
increased number is 95 + 5% of 95
=> 95 + 4.75
=> 99.75
Net change in number(decrease) = original value - new value
=> 100 - 99.75
=> 0.25
required % = (0.25/100) × 100
=> 0.25%
Therefore The net decrease in number is 0.25%

Q81. Answer: (d) 30 hours

Given
A fills a tank in 15 hours
B fills a tank in 20 hours
C empty the tank in 12 hours
Concept
Find the efficiency of each tank.
work done = Efficiency × time
Calculation
Total work(L.C.M of 15, 20 and 12) = 60 units
Tank filled by A in one hour = 60/15
=> 4 units
Tank filled by B in one hour = 60/20
=> 3 units
Tank emptied by C in one hour = 60/12
=> 5 units
Tank filled in 1 hour = 4 + 3 - 5
=> 7 - 5
=> 2 units
Total time taken to fill the tank = 60/2

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=> 30 hours

Therefore Tank will be filled in 30 hours.

Q82. Answer: (c) 8

Given

A and B finish a work in 9 days

B and C finish a work in 12 days

A and C finish a work in 18 days

Concept

Find the efficiency. Means first find the work done by person in one day. then, reciprocate the answer to find the number of days, in which the work will be complete.

Calculation

Work done by A and B in one day(A + B) = (1/9) ---- (1)

work done by B and C in one day(B + C) = 1/12 ---- (2)

work done by A and C in one day(C + A) = 1/18 ---- (3)

Adding (1), (2) and (3)

=> A + B + B + C + C + A = (1/9) + (1/12) + (1/18)

=> 2A + 2B + 2C = (4 + 3 + 2)/36

=> 2(A + B + C) = 9/36

=> 2(A + B + C) = 1/4

=> A + B + C = 1/8

1/8th work is done by A, B and C in one day. so, Total work done by A, B and C in 8 days.

Therefore A, B and C finish the work together in 8 days.

Q83. Answer: (d) Seven

The correct answer is seven.

Key Points

• Following coal, gas, hydroelectricity, and wind power, nuclear power is India's fifth-largest source of electricity.

• India has 22 nuclear reactors in operation in seven nuclear power facilities, with a total installed capacity of 7,380 megawatts (MW) as of November 2020.

• In 2020-21, nuclear power generated 43 TWh, accounting for 3.11 percent of India's total electricity generation (1,382 TWh).

• Ten additional reactors, with a total capacity of 8,000 MW, are now under development.

• India has made progress in the field of thorium-based fuels, aiming to design and create a prototype for an atomic reactor using thorium and low-enriched uranium, which is a significant component of the country's three-stage nuclear power programme.

Important Points

• India's native uranium supplies are limited, and the country's nuclear power industry is reliant on uranium imports.

• Because of huge concentrations of thorium (518,000 tonnes) in the form of monazite in beach sands compared to very little amounts of low-grade uranium, India has demonstrated greater interest in thorium fuels and fuel cycles (92,000 tonnes).

Additional Information

Nuclear Plants	Location
Kakrapar Atomic Power Station – 1993	Gujarat
(Kalpakkam) Madras Atomic Power Station – 1984	Tamil Nadu
Narora Atomic Power Station- 1991	Uttar Pradesh
Kaiga Nuclear Power Plant -2000	Karnataka
Rajasthan Atomic Power Station – 1973	Rajasthan
Tarapur Atomic Power Station – 1969	Maharashtra
Kudankulam Nuclear Power Plant – 2013	Tamil Nadu

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Q84. Answer: (a) Gir

The correct answer is Gir.

Key Points

• The Gir Forest in Gujarat is home to more than 523 wild Asiatic lions, while plans are in the works to reintroduce them to the Palpur-Kuno Wildlife Sanctuary in neighbouring Madhya Pradesh, India, to secure their long-term survival against epidemics and natural disasters.

• Gir National Park and Wildlife Sanctuary, located near Talala Gir in Gujarat, India, is a forest, national park, and wildlife sanctuary.

• It was founded in 1965 in the former private hunting territory of the Nawab of Junagarh, with a total area of 1,412 km² (545 sq mi), of which 258 km² (100 sq mi) is fully protected as a national park and 1,153 km² (445 sq mi) is protected as a wildlife sanctuary.

Important Points

• Sariska Tiger Reserve is a tiger reserve in Rajasthan's Alwar district.

• Kanha Tiger Reserve is Central India's largest tiger reserve and the state of Madhya Pradesh's largest national park.

• Bandhavgarh National Park is an Indian national park in Madhya Pradesh's Umaria district.

Q85. Answer: (d) L

The logic followed here is :-

L, M, N, O, P, Q, R and S are sitting in a circle facing the centre.

1) S is to the right of R and R is to the right of O and O is to the right of N.

2) P is to the left of N and right of L and Q is the right of S.

Therefore Here, 'L' is sitting to the right of M.

Hence, the correct answer is "L".

Q86. Answer: (d) 240

Class	subjects	pass % students	Number of failed studentS	% of failed students	Total number of students	pass number of students	
10	Maths	65	105	35	35% of x =105 x =300	195	
10	Hindi	80	120	20	20% of x =120 x = 600	480	
11	English	40	360	60	60% of x =360 x= 600	240	
12	Psychology	75	100	25	25% of x = 100 x = 400	300	
12	Biology	50	110	50	50% of x = 110 x = 220	110	
	Total		795		2120	1325	

Therefore The number of students who passed in 11^(th) class are 240.

Q87. Answer: (b) 37.5

Class	subjects	pass % students	Number of failed studentS	% of failed students	Total number of students	pass number of students	
10	Maths	65	105	35	35% of x = 105 x =300	195	
10	Hindi	80	120	20	20% of x = 120 x = 600	480	
11	English	40	360	60	60% of x =360 x= 600	240	

12	Psychology	75	100	25	25% of x = 100 x = 400	300	
12	Biology	50	110	50	50% of x = 110 x = 220	110	
	Total		795		2120	1325	

Required percentage = (795/2120) × 100

=> 37.54

Therefore The percentage of the total students who failed considering all the three classes i.e. 10th, 11th and 12th and in all five given subjects is 37.54

Q88. Answer: (b) 265 : 159

Class	subjects	pass % students	Number of failed studentS	% of failed students	Total number of students(x)	pass number of students	
10	Maths	65	105	35	35% of x = 105 x =300	195	
10	Hindi	80	120	20	20% of x =120 x =600	480	
11	English	40	360	60	60% of x = 360 x = 600	240	
12	Psychology	75	100	25	25% of x = 100 x = 400	300	
12	Biology	50	110	50	50% of x =110 x = 220	110	
	Total		795		2120	1325	

Required ratio = 1325 : 795

265 : 159

Therefore The ratio of total students who passed to total students who failed considering all the three classes i.e. 10th, 11th and 12th and all the five given subjects are 265 : 159

Q89. Answer: (d) Psychology and Hindi

Class	Subjects	Pass % students	Number of failed students	% of failed students	Total number of students(x)	pass number of students
10	Maths	65	105	35	35% of x = 105 x = 300	195
10	Hindi	80	120	20	20% of x = 120 x = 600	480
11	English	40	360	60	60% of x = 360 x = 600	240
12	Psychology	75	100	25	25% of x = 100 x = 400	300
12	Biology	50	110	50	50% of x = 110 x = 220	110
	Total		795		2120	1325

Psychology and Maths = 300 + 195

=> 495

Biology and Psychology = 110 + 300

=> 410

Hindi and Maths = 480 + 195

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=> 675

Psychology and Hindi = 300 + 480

=> 780

Therefore Two subjects Psychology and Hindi were the number of students who passed, the highest.

Q90. Answer: (a) 722

The logic followed here is :-

(3 × 2) - 2 = 6 - 2 = 4

(4 × 3) - 4 = 12 - 4 = 8

(8 × 4) - 6 = 32 - 6 = 26

(26 × 5) - 8 = 130 - 8 = 122

(122 × 6) - 10 = 732 - 10 = 722

Hence, the correct answer is "722".

Q91. Answer: (b) A is false but R is true.

Assertion (A): Greenland is entirely green. - This is false because Greenland is mostly white due to ice, snow and glaciers.

Reason (R): Polar regions have snow round the year. - This is true because even though it has two seasons - summer and winter, in the summer, the sun shines 24 hours a day, but it never gets high enough above the horizon to warm things up, so even summers are pretty cold. It's dark all winter at the poles, because the sun doesn't rise during those months of the year. The North Pole is surrounded by the Arctic Ocean. There isn't any land here, just a group of continually shifting ice sheets. The South Pole is located on Antarctica. This area has land, but it's completely covered with a layer of ice that's almost three miles thick in some places.

Hence, A is false but R is true.

Q92. Answer: (a) 90

Given

5th part of a number when divided by 3 yields three times half of tenth part of half 80

Calculation

let a number is x

5th part of a number = x/5

According to question

(x/5)/3 = 3 × (1/2) × (1/10) × (1/2) × 80

=> x/15 = 6

=> x = 90

Therefore The number is 90.

Q93. Answer: (a) 118

The logic followed here is :-

Hence, the correct answer is "118".

Q94. Answer: (c) D

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

Assumptions:

A. Some Woods are only Metal → False (it is possible but not definite)

B. Some Woods are only Benches → False (it is possible but not definite)

C. Some Benches are Woods → False (it is possible but not definite)

D. Some Metal are Woods → True (As All Benches and Nails are Metal and Some Woods are Nails so, Some Metal are Woods is implicit)

Therefore Here, from the given statements, "Some Metal are Woods" is implicit.

Hence, the correct answer is "Some Metal are Woods".

Q95. Answer: (c) 8^(th)

The logic followed here is :-

Previous position of Seema from left side = 9 (shifting by two places)

Previous position of Seema from right side = 16 - 9 + 1

Previous position of Seema from right side = 8

Therefore Here, Seema is 8^(th) from the right end.

Hence, the correct answer is "8^(th)".

Q96. Answer: (c) 109

The logic followed here is :-

Hence, the correct answer is "109".

Q97. Answer: (a) 448

The logic followed here is :-

Therefore Here, the number '336' belongs to the series instead of '448'.

Hence, the correct answer is "448".

Q98. Answer: (d) RIDE

The logic followed here is:

Hence, the correct answer is "RIDE".

Q99. Answer: (c) 3

The logic followed here is :-

Sum of alphabet positional values until single digit is obtained.

CPHUDQ = 6

=> 3 + 16 + 8 + 21 + 4 + 17 = 69

=> 69 = 6 + 9 = 15

=> 1 + 5 = 6

and

BOY = 6

=> 2 + 15 + 25 = 42

=> 42 = 4 + 2 = 6

Similarly,

FUNDAMENTAL will be equal to :

=> 6 + 21 + 14 + 4 + 1 + 13 + 5 + 14 + 20 + 1 + 12 = 111

=> 111 = 1 + 1 + 1 = 3

Hence, the correct answer is "3".

Q100. Answer: (c) None follows

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

Conclusions:

1. Some Cows are Bulls → Does not follow (As All Bulls are Black but not Cows so, no cow can be bull)

2. All Blacks are Cows → Does not follow (As All Bulls are Black but not Cows so, no cow can be bull)

3. All Blacks are Bulls → False (As All Bulls are Black but not Cows so, no cow can be bull)

Therefore Here, conclusions 1, 2 and 3 do not follow.

Hence, the correct answer is "1, 2, 3".

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