RRB NTPC CBT-I Official Paper (Held On: 18 Jan 2021 Shift 1) (Previous Year Paper)

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

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Q1. In 1998, nuclear explosive devices were tested at _____ in India.

(a) Bangalore
(b) Pokharan
(c) Thumpa
(d) Sriharikota

Q2. A question is given followed by two arguments. Decide which of the arguments is/are strong with respect to the question.

Question:

Should plastic bags be banned in India?

Arguments:

I. Yes, it is one of the sources of pollution and causes many diseases.

II. No, other alternatives of plastic may not be that colourful and attractive.

(a) Only II is strong
(b) None is strong
(c) Both arguments are strong
(d) Only I is strong

Q3. Pipe A can fill a tank in 80 min and pipe B can fill the tank in 40 min. If A and B are opened together, then in how many minutes will the tank be filled?

(a) 27
(b) 26
(c) 261/3
(d) 262/3

Q4. If 111 _____ 1 (n digits) is divisible by 9, then the least value of n is:

(a) 9
(b) 18
(c) 3
(d) 12

Q5. Saudi Arabia leads the world in export of petroleum in 2018-19. Which country holds the second position?

(a) Brazil
(b) United States
(c) Russia
(d) Mexico

Q6. Green plants and certain bacteria manufacture their own food. Which one of the following nutrition process do they adopt?

(a) Saprotrophic Nutrition
(b) Autotrophic Nutrition
(c) Parasitic Nutrition

(d) Holozoic Nutrition

Q7. Which one of the following states has the highest length of railway lines in kilometers?

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

Q8. Champaran in Bihar was a witness to satyagrah by Mahatma Gandhi in the year _____.

(a) 1917
(b) 1915
(c) 1918
(d) 1916

Q9. 14 people buy item A while 13 people buy item B. Two people buy both items. How many people are there in all?

(a) 26
(b) 25
(c) 29
(d) 27

Q10. Two partners A and B have started business with the capitals of Rs. 6,000 and Rs. 8,000 respectively. If they made profit of Rs. 5,600 then the share (in Rs.) of A is:

(a) 2,800
(b) 2,100
(c) 3,200
(d) 2,400

Q11. Which one of the following is not a computer virus but is, basically, a computer language?

(a) Python
(b) Code Red
(c) Conficker
(d) Sasser

Q12. Solve the following.

$(0.8 \times 0.8 \times 0.8 - 0.7 \times 0.7 \times 0.7)/(0.8 \times 0.8 + 0.56 + 0.7 \times 0.7) = ?$

(a) 1.49
(b) 0.1
(c) 1.0
(d) 1.56

Q13. If 12 : 51 :: x : 17 then x = ?

(a) 6
(b) 7
(c) 4
(d) 5

Q14. If the outer and inner radii of a circular path are 2a and b, then its area is _____ sq. units.

(a) $(-4a^2 + b^2)$
(b) $(4a^2 – b^2)$
(c) $\pi(4a^2 - b^2)$
(d) $\pi(-4a^2 + b^2)$

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Q15. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, from the given options, decide which conclusion logically follows from the statements.

Statement 1: Some locks are keys

Statement 2: All keys are doors.

(a) Some locks are doors
(b) All locks are doors
(c) All doors are keys
(d) No lock is door

Q16. Mohan is twice as good as Kamlesh and together, they finish a task in 22 days. Mohan alone can finish the task in:

(a) 35 days
(b) 31 days
(c) 33 days
(d) 37 days

Q17. A, B and C can complete a piece of work in 6, 12 and 24 days respectively. They all together will complete the work in:

(a) 52/7 days
(b) 33/7 days
(c) 42/7 days
(d) 43/7 days

Q18. If the value of J = 25 and GAME = 65 then, which of the following would be the value of BASIC?

(a) 75
(b) 85
(c) 74
(d) 89

Q19. Baichung Bhutia was the first Indian sportsman to refuse to carry the Olympic torch relay to support the -

(a) Tibetan Independence Movement
(b) Children not provided training facilities for sports.
(c) More funds for Indian sports.
(d) Discrimination Against Women

Q20. Name the only bird that can fly backwards.

(a) Penguin
(b) Wood pecker
(c) Sparrow
(d) Humming Bird

Q21. Which organisation launched a military communication satellite for Indian Air Force called- GSAT-7A in December 2018?

(a) DST
(b) MES
(c) AIIMS
(d) ISRO

Q22. Government of India has introduced 'Beti Bachao, Beti Padao' programme to address the issue of -

(a) Freedom of Speech
(b) Equality between different social groups
(c) Provide health facilities to all
(d) Decline in girl child sex-ratio

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Q23. _____ was the first bank to be fully managed by Indians.

(a) Punjab National Bank
(b) DENA Bank
(c) Bank of India
(d) Allahabad Bank

Q24. The number whose only factors are 1 and the number itself is called a/an _____ number.

(a) prime
(b) composite
(c) odd
(d) Even

Q25. Select the option that is related to the third term in the same way as the second term is related to the first term.

Court : Justice :: College : ?

(a) Student
(b) Teacher
(c) Books
(d) Education

Q26. Which one of the following is not a hardware component of a computer?

(a) Printer
(b) Keyboard
(c) Mouse
(d) Memory

Q27. Which one of the following is not a part of the Local Government in India?

(a) Gram Panchayat
(b) Zila Parishad
(c) Development Authority
(d) Nagar Palika

Q28. The LCM of $8^2 \times 6^3$ and $4^6 \times 9^3$ is:

(a) $2^9 \times 3^6$
(b) $2^9 \times 3^3$
(c) $2^{12} \times 3^3$
(d) $2^{12} \times 3^6$

Q29. If ΔABC and ΔPQR are similar and rmBC/QR = 1/3, find (ar(Δ PQR))/(ar(Δ BCA))

(a) 3
(b) 1/9
(c) 9
(d) 1/3

Q30. Who formulated the 'Peoples Plan' (an economic plan) in India?

(a) C.D. Deshmukh
(b) MN Roy
(c) Sardar Vallabhai Patel
(d) Jay Prakash Narayan

Q31. Select the number from among the given options that can replace the question mark (?) in the following series.

8, 17, 35, 71, ?

(a) 133
(b) 142
(c) 141
(d) 143

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Q32. Near-sightedness in humans is called:

(a) Cataract
(b) Presbyopia
(c) Hypermetropia
(d) Myopia

Q33. The First elected Parliament of independent India came into existence in -

(a) 1949
(b) 1947
(c) 1951
(d) 1952

Q34. Which scheme was launched in 2014 to provide affordable access to financial services- bank account, credit, insurance, pension etc.?

(a) Pradhan Mantri Jan Dhan Yojana
(b) MGNREGA
(c) JNNURM
(d) Pradhan Mantri Bima Suraksha Yojana

Q35. Al- Biruni, the Persian scholar, accompanied which invader to Afghanistan and India?

(a) Alexander
(b) Allaudin Khilji
(c) Mahmud Ghazni
(d) Muhammad Ghori

Q36. A, B and C are partners in a business with a total capital of Rs. 33,000. The profit at the end of the year is Rs. 15,000 that is to be divided in proportion to their capitals. A receives Rs. 4,500 and B receives Rs. 5,500 as their shares in profit. Find C's capital (in Rs.).

(a) 12,000
(b) 14,000
(c) 11,000
(d) 13,000

Q37. The study of birds is called _____.

(a) Herpetology
(b) Ornithology
(c) Anthropology
(d) Ophthalmology

Q38. Write the ratios 5 : 3, 7 : 5 and 6 : 4 in descending order.

(a) 5/3 > 7/5 > 6/4
(b) 5/3 > 6/4 > 7/5
(c) 7/5 > 6/4 > 5/3
(d) 6/4 > 7/5 > 5/3

Q39. The international organisation that coordinates UN Environmental activities is:

(a) United Nations Environment Protection Council
(b) United Nations Environment Programme
(c) United Nations Economic and Social Organisation
(d) United Nations Security Council

Q40. The President can nominate two members of which community to the Lok Sabha?

(a) Tribals
(b) Parsi
(c) Anglo-Indian

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(d) Scheduled Class

Q41. Which one of the following passes is located at the crest of the Western Ghats and connects Mumbai with Pune?

(a) Asirgarh Fort Pass
(b) Bhor Ghat Pass
(c) Amba Ghat Pass
(d) Tamhini Ghat Pass

Q42. If the length of a rectangular solar panel having an area of 110 m² is 10% more than its breadth, then what will be the breadth?

(a) 110 m
(b) 10 m
(c) 20√3 m
(d) 10√3 m

Q43. Find the value of the expression

[cosec(75° + θ) – sec(15° – θ) – tan(55° + θ) + cot(35° – θ)]

(a) 3/2
(b) 0
(c) -1
(d) 1

Q44. _____ is one of the major factor responsible for deforestation.

(a) Drought
(b) Cyclones
(c) Eruption of Volcanoes
(d) Agriculture

Q45. The Rio Declaration on Environment and Development was approved by the United Nations in the year:

(a) 2018
(b) 2002
(c) 1992
(d) 2012

Q46. Select the number from among the options given that is related to the third number in the same way as the second number is related to the first number.

3 : 28 :: 9 : ?

(a) 81
(b) 730
(c) 80
(d) 729

Q47. Which one of the following animals was frequently seen on the seals of the Harrapan Civilisation?

(a) Fox
(b) Bull
(c) Lion
(d) Deer

Q48. If sinθ + cosecθ = 2 then the value of sin^8θ + cosec^8θ is:

(a) 1
(b) 2
(c) 2^8
(d) 2^4

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Q49. Who enjoys the power to summon, prorogue either house of Indian Parliament?

(a) The Chief Election Commissioner
(b) The Vice President
(c) The President
(d) The Prime Minister

Q50. 1254 + 125.4 + 12.54 + 1.254 = ?

(a) 1393.184
(b) 1383.184
(c) 1393.194
(d) 1383.194

Q51. In a certain language

GJL TUO CBM stands for 'It is car'
QAZ GJL KJH stands for 'He is Ram'
CBM KJH OIU stands for 'Ram has car'
In that language, which of the following stands for 'It'?

(a) QAZ
(b) TUO
(c) CBM
(d) KJH

Q52. Which one of the following is the correct sequence of steps in Digestive System?

(a) Absorption, Egestion, Digestion, Ingestion
(b) Egestion, Ingestion, Absorption, Digestion
(c) Ingestion, Digestion, Absorption, Egestion
(d) Ingestion, Absorption, Egestion, Digestion

Q53. In Lucknow Session of Congress in 1916, both the Moderates and Extremist leaders were united. It was presided over by _____.

(a) Jawaharlal Nehru
(b) Ambika Charan Majumdar
(c) CR Das
(d) Motilal Nehru

Q54. In right angle ΔABC, right angled at B, if tanA = √3 then sinAcosC + cosAsinC = ?

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

Q55. Which one of the following scholars coined the term- Geography?

(a) Herodotus
(b) Aristotle
(c) Eratosthenes
(d) Plato

Q56. In Pradhan Mantri Gramin DISHA (PMGDISHA) Programme, DISHA stands for:

(a) Distance Integrated Social Humanitarian Association
(b) Distance Human Association
(c) Development Interior Skiksha Help and Assistance
(d) Digital Saksharta Abhiyan

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Q57. The value of a machine depreciates at the rate of 10% per annum. If its present value is Rs. 1,62,000, what was the value (in Rs.) of the machine 2 years ago?

(a) 50,000
(b) 1,31,220
(c) 54,66,123
(d) 2,00,000

Q58. Which famous person identified with the slogan- "Do or Die"?

(a) Mahatma Gandhi
(b) Rajiv Gandhi
(c) Jawaharlal Nehru
(d) Indira Gandhi

Q59. Pointing to Sohan, Rahul said "Sohan is the husband of my wife's daughter". How is Sohan related to Rahul?

(a) Son
(b) Son in law
(c) Brother
(d) Father

Q60. What was the actual reason considered to be behind the Partition of Bengal by Lord Curzon?

(a) Bengal has emerged as an education center.
(b) All freedom fighters were from Bengal.
(c) Bengalis were opposing English dress and food.
(d) Divide and Rule Policy of the British.

Q61. Select the alphanumeric clusters from among the given options that can replace the question mark (?) in the following series.

z1, x4, v9, t16, ?

(a) r25
(b) t26
(c) s24
(d) v25

Q62. Select the number from the given options, which has a characteristic common with the following numbers.

29, 43, 59, 53, 89

(a) 96
(b) 79
(c) 87
(d) 81

Q63. Which one of the following statements is correct about a computer?

(a) A computer is composed of only hardware.
(b) An electronic device that stores, retrieves and processes data.
(c) A computer can organise all information on its own.
(d) A computer is composed of only software.

Q64. Which one of the following cities does not form a part of tourist circuit 'The Golden Triangle'?

(a) Agra
(b) Lucknow
(c) Delhi
(d) Jaipur

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Q65. If $a^3 + b^3 : a^3 - b^3 = 185 : 158$ then a : b = ?

(a) 10 : 2
(b) 5 : 4
(c) 2 : 3
(d) 7 : 3

Q66. The famous Hornbill Festival is unique to which Northeast state of India?

(a) Nagaland
(b) Assam
(c) Meghalaya
(d) Mizoram

Q67. (47)^(25) - 1 is exactly divisible by:

(a) 23
(b) 19
(c) 21
(d) 24

Q68. Which one of the following lines runs parallel to Arabian Sea?

(a) The Central Railways
(b) The Konkan Railways
(c) The Western Railways
(d) The Southern Railways

Q69. If 1/3 A = 1/4 B = 1/5 C, then A : B : C = ?

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

Q70. Which one of the following is not an international organization?

(a) Defence Research and Development Organization
(b) Statistical Office of European Union
(c) World Tourism Organization 1 options 1,2
(d) Organization for Economic Cooperation and Development

Q71. If the equations $x^2 + ax + b = 0$ and $x^2 + bx + a = 0$ have a common root, then find the value of a + b (where a is not equal to b)

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

Q72. In a certain code language, PASSPORT is written as RCUUNMPR. How will DOMINANT be written as in that language?

(a) FQOKLYLR
(b) EQOKJXJQ
(c) FQOKPCPV
(d) RCUUPFPC

Q73. If 3x/2y = 48/72 then rmx/y in its lowest term is:

(a) 4/9
(b) 3/9
(c) 5/9
(d) 2/9

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Q74. If $X = 3^2 \times 2$, $Y = 2^3 \times 3$ and $Z = 3^2 \times 2^2$ then the L.C.M. of XY, YZ, ZX is:

(a) 2582
(b) 2492
(c) 2592
(d) 2482

Q75. The Red Fort of Agra was founded by which Mughal Emperor?

(a) Jahangir
(b) Bahadurshah Zafar
(c) Shahjahan
(d) Akbar

Q76. Select the number from among the given options that can replace the question mark (?) in the following series.

3, 9, 21, 45, ?

(a) 68
(b) 93
(c) 91
(d) 82

Q77. The length of each side of an equilateral triangle is $24\sqrt{3}$ cm. What is the area of this triangle?

(a) $2\sqrt{3}$ cm²
(b) 3 cm²
(c) $4\sqrt{3}$ cm²
(d) 4 cm²

Q78. Kuna is the currency of which one of the following countries?

(a) Kenya
(b) Croatia
(c) United Arab Emirates
(d) Sudan

Q79. Find the value of sin 15°.

(a) $(\sqrt{3} - 1)/\sqrt{2}$
(b) $(\sqrt{3} + 1)/\sqrt{2}$
(c) $(\sqrt{3} + 1)/2\sqrt{2}$
(d) $(\sqrt{3} - 1)/2\sqrt{2}$

Q80. Six people - Raj, Shruti, Priya, Mohan, Ajit and Geet - are sitting around a circular table facing inside. Mohan is second from Priya's right and Priya is third from Raj's left. Ajit is second from Mohan's right and Geet is not Mohan's neighbour. Who is fourth to the right of Geet?

(a) Priya
(b) Shruti
(c) Raj
(d) Mohan

Q81. The diameter of circle whose perimeter is 8.8 cm is _____. ($\pi = 22/7$)

(a) 0.28 cm
(b) 1.4 cm
(c) 5.6 cm
(d) 2.8 cm

Q82. The Book - The Test of My Life - was written by-

(a) Saina Nehwal
(b) Kapil Dev
(c) Sachin Tendulkar

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(d) Yuvraj Singh

Q83. Which number among the given options does not belong to the following series?

4, 7, 13, 26, 49, 97

(a) 97
(b) 13
(c) 49
(d) 26

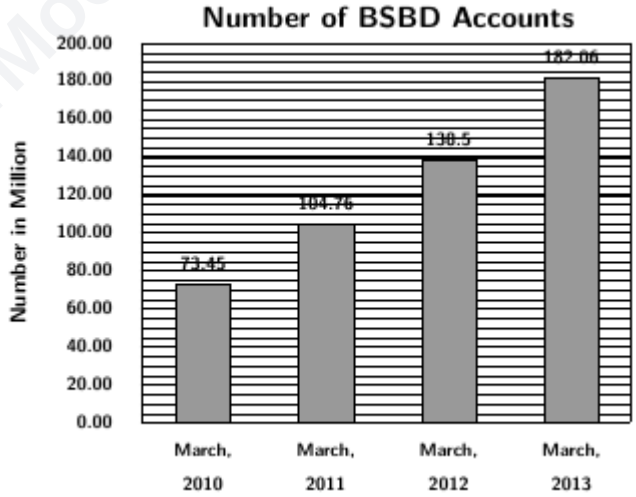
Q84. The least number that should be added to 5474, so that the sum is exactly divisible by 3, 4, 6 and 8 is:

(a) 24
(b) 21
(c) 22
(d) 23

Q85. What number has to be added to each term of 3 : 5 to make the ratio 5 : 6?

(a) 11
(b) 7
(c) 5
(d) 6

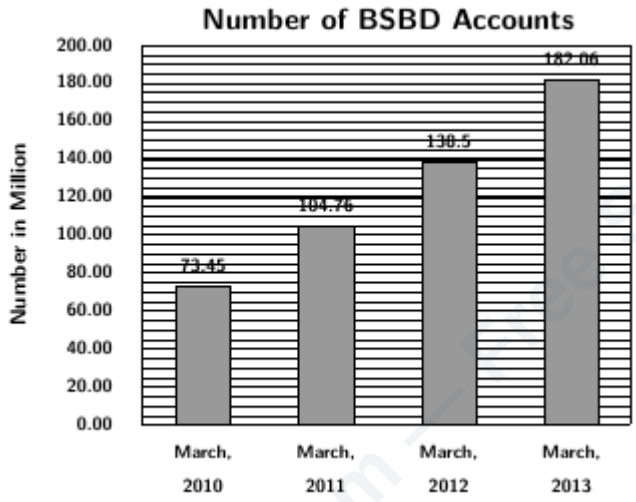
Q86. Study the following bar graph and answer the question that follows.



In which year was the number of accounts approximately 15% of the total number of accounts in all the years.

(a) Mar 2010
(b) Mar 2011
(c) Mar 2013
(d) Mar 2012

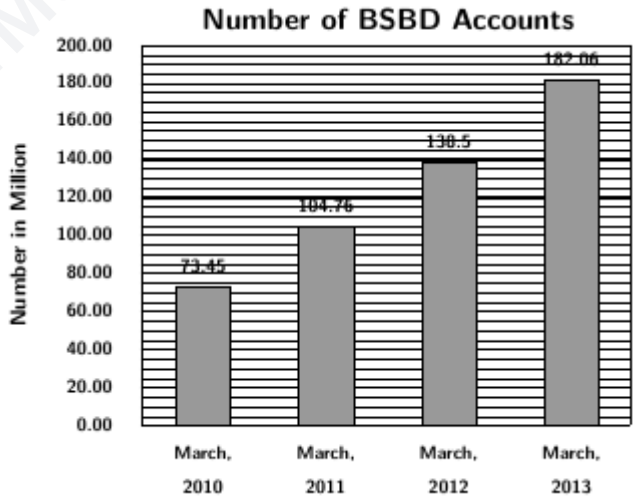
Q87. Study the following bar graph and answer the question that follows.



What is the approximate difference in the number of accounts for March 2010 and March 2011 as a percentage of the total number of accounts represented in the graph?

(a) 6%
(b) 20%
(c) 14%
(d) 3%

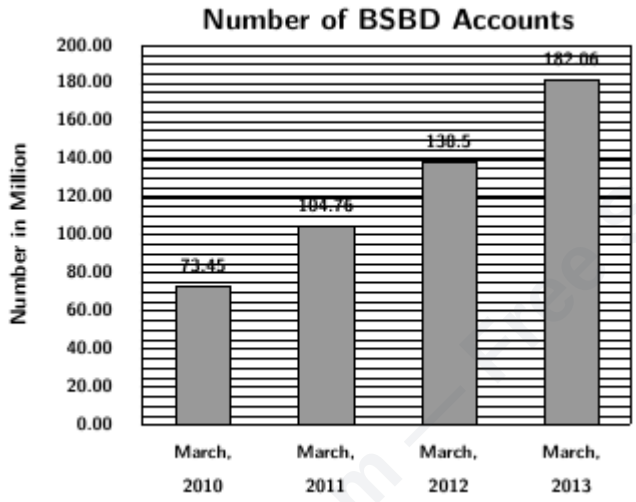
Q88. Study the following bar graph and answer the question that follows.



How many accounts were opened in first three years?

(a) 316
(b) 306
(c) 311
(d) 406

Q89. Study the following bar graph and answer the question that follows.



What is the growth rate in the number of accounts in 2013 as that of previous year?

(a) 34%
(b) 28%
(c) 15%
(d) 31%

Q90. Select the number from among the given options that can replace the question mark (?) in the following series.
1, 8, 27, 64, ?

(a) 149
(b) 196
(c) 125
(d) 216

Q91. Select the letter clusters from among the given options that can replace the question mark (?) in the following series.
ab, cc, ed, ge, ?

(a) if
(b) hf
(c) id
(d) gf

Q92. Out of the four numbers listed, three are alike in some manner and one is different. Select the odd one.

(a) 4913
(b) 1000
(c) 1728
(d) 3315

Q93. Ram has 15 toffees, 10 biscuits and 5 chocolates. He gave one-third toffees to Sohan and half of the biscuits to Mohan. Sohan exchanged all toffees with Mohan against two biscuits. Mohan gave the remaining biscuits to Ram to get two chocolates. How many biscuits will be left with Ram, if he gives half of the biscuits, in the end, to Sohan?

(a) 4
(b) 10
(c) 8
(d) 5

Q94. There are 21 persons and there are three languages - French German and Japanese. 10 persons speak German, 12 persons speak Japanese, and 10 persons speak French. 4 can speak only French and 5 can speak only Japanese. 4 can speak French as well as German. 3 persons can speak all languages. How many persons speak Japanese and German?

(a) 1
(b) 3

(c) 4
(d) 5

Q95. A question is given followed by two arguments. Decide which of the arguments is/are strong with respect to the question.

Question:

Should vegetarian food be banned in India?

Arguments:

I. No, it is cheap source of protein and other minerals and a lot of people can afford it.

II. No, it will violate people's freedom.

(a) Only argument II is strong
(b) None is strong
(c) Both are strong
(d) Only I is strong

Q96. If '+' means 'division', '÷' means 'multiplication', '-' means 'addition' and '×' means 'subtraction', then find the value of 15 + 3 - 8 ÷ 9 × 7

(a) 81
(b) 64
(c) 72
(d) 70

Q97. Four items connected with computers are listed, out of which three are alike in some manner and one is different. Select the odd one.

(a) Hard disk
(b) CD
(c) Flash Drive
(d) Monitor

Q98. A is twice of B. B is half of D. D is three times of C. A is how many times of D?

(a) 3
(b) 0.5
(c) 1
(d) 4

Q99. Select the number from among the given options that can replace the question mark (?) in the following series.

0, 6, 20, 42, ?

(a) 68
(b) 72
(c) 86
(d) 70

Q100. In a group of 20 students, 15 opt for English, 10 opt for Hindi. Five students are studying both languages. How many students are studying only English?

(a) 10
(b) 15
(c) 25
(d) 5

ANSWER KEY

1	b	2	d	3	d	4	a	5	c	6	b	7	b	8	a	9	b	10	d
11	a	12	b	13	c	14	c	15	a	16	c	17	b	18	b	19	a	20	d

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

SOLUTIONS

Q1. Answer: (b) Pokharan

The correct answer is Pokhran.

Key Points

• Nuclear Testing in India

• Nuclear explosive devices were tested in India at Pokhran.

• Hence, Option 2 is correct.

• Pokhran is a village and a municipality located in the Jaisalmer district of the Indian state of Rajasthan.

• It is a remote location in the Thar Desert region and served as the test site for India's first underground nuclear weapon, ballistic missiles.

• The Pokhran-II tests were a series of five nuclear bomb test explosions conducted by India at the Indian Army's Pokhran Test Range in May 1998.

• It was the second instance of nuclear testing conducted by India; the first test, code-named Smiling Buddha, was conducted in May 1974.

• Smiling Buddha was the assigned code name of India's first successful nuclear bomb test on 18 May 1974.

Additional Information

• India’s nuclear program started in March 1944 and its three-stage indigenous efforts in technology were established by Dr. Homi Bhabha when he founded the nuclear research center, the Institute of Fundamental Research.

• India’s loss of territory to China in the war of 1962, provided the New Delhi government impetus for developing nuclear weapons as a means of deterring potential Chinese aggression.

• India first tested a nuclear device in 1974 (code-named “Smiling Buddha”), which is called a “peaceful nuclear explosion.”

• India performed further nuclear tests in 1998 (code-named “Operation Shakti”).

Q2. Answer: (d) Only I is strong

• The question is about the decision of banning plastic bags in India.

1. Argument 1 states the harmful effects of using plastic bags and thus justifies the action of banning them. It claims that plastic bags are one of the sources of pollution and they also cause many diseases. This justification is strong enough to consider banning plastic bags.

• Therefore, argument 1 is strong.

2. Argument 2 is unreasonable. It says that other alternatives are possibly not attractive and colourful enough. However, it does not explain the significance of the colourful or attractive appearance of plastic bags. This reason is not enough to counter the decision of banning plastic bags.

• Therefore, argument 2 is not strong.

Hence, "only I is strong" is the correct answer.

Q3. Answer: (d) 262/3

Given

Pipe A can fill a tank in 80 min

Pipe B can fill a tank in 40 min

Concept

First find the tank filled by pipe A and B together in one minute. and then, reciprocate the answer to find the time taken by both the pipes to filled the tank

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Calculation

Tank filled by pipe A in 1 minute = 1/80

Tank filled by pipe B in 1 minute = 1/40

Tank filled by pipe A and B in 1 minute together = (1/80) + (1/40)

=> (1 + 2)/80

=> 3/80

Therefore Tank will be filled by A and B together in 80/3 minutes. i.e. 262/3

Q4. Answer: (a) 9

Given

111 _____ 1 (n digits) is divisible by 9

Concept

a number is divisible by 9, if the sum of the digit of the number is divisible by 9

Calculation

let there are nine times one, then sum of nine times one is nine. nine is divisible by 9. so, n is 9

let a number is 111111111

1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 = 9

Therefore The least value of n is 9.

Q5. Answer: (c) Russia

The correct answer is Russia.

Key Points

• Saudi Arabia leads the world in the export of petroleum in 2018-19. Russia, Iraq, and the USA hold the second, third, and fourth positions respectively. Hence, Option 3 is correct

• More than half of the world's proven oil reserves are located in the Middle East (including Iran but not North Africa).

• Canada, the United States, Latin America, Africa, and the region occupied by the former Soviet Union contain less than 15 percent of the world's proven reserves.

Additional Information

• Oil Fields in Russia

• Russia is thought to possess the best potential for new discoveries.

• It has significant proven reserves of 5 percent of the world total—and is the world’s leading petroleum producer.

• There are two supergiant oil fields – Western Siberia and Yenisey Khatanga.

• Kamchatka peninsula and Sakhalin Island are said to have significant oil reserves.

• Volga-Caspian Region has many oil and gas fields.

• Oilfields in Saudi Arabia

• Saudi Arabia has the second-largest proven oil reserves (Venezuela has the largest proven oil reserves).

• Approximately 20 percent of the world’s proven reserves.

• The discovery that transformed Saudi Arabia into a leading oil country was the Al-Ghawar oil field. (still has 70 billion barrels after 60 years of production)

• Another important discovery was the Saffaniyah offshore field in the Persian Gulf. It is the third-largest oil field in the world and the largest offshore.

Q6. Answer: (b) Autotrophic Nutrition

The correct answer is Autotrophic Nutrition.

Key Points

• Autotrophic Nutrition

• It is an organism that can produce its own food using light, water, carbon dioxide, or other chemicals. Because autotrophs produce their own food, they are sometimes called producers. Hence, Option 2 is correct.

• Plants are the most familiar type of autotroph, but there are many different kinds of autotrophic organisms. Algae, which live in water and whose larger forms are known as seaweed, are autotrophic.

• Phytoplankton, tiny organisms that live in the ocean, are autotrophs. Some types of bacteria are autotrophs.

• Most autotrophs use a process called photosynthesis to make their food. In photosynthesis, autotrophs use energy from the sun to convert water from the soil and carbon dioxide from the air into a nutrient called glucose. Glucose is a type of sugar.

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• The glucose gives plants energy. Plants also use glucose to make cellulose, a substance they use to grow and build cell walls.

• All plants with green leaves, from the tiniest mosses to towering fir trees, synthesize or create, their own food through photosynthesis. Algae, phytoplankton, and some bacteria also perform photosynthesis.

• Some rare autotrophs produce food through a process called chemosynthesis, rather than through photosynthesis.

• Autotrophs that perform chemosynthesis do not use energy from the sun to produce food. Instead, they make food using energy from chemical reactions, often combining hydrogen sulfide or methane with oxygen.

Additional Information

• Saprotrophic nutrition or lyotropic nutrition

• It is a process of chemoheterotrophic extracellular digestion involved in the processing of decayed organic matter.

• It occurs in saprotrophs and is most often associated with fungi and soil bacteria.

• Parasitic nutrition

• It is a type of nutrition in which the organisms live on or inside the body of their host and derive their food from them.

• The organism which obtains the food is called a parasite and the organism from whose body food is obtained is called the host-parasite usually harms the host.

• Holozoic nutrition

• It can be defined as a method of nutrition that involves the ingestion of some complex organic substances that may be in a solid or liquid state.

• It is the process of nutrition that takes place in organisms that take solid or liquid food inside their body. Amoeba follows holozoic nutrition.

Q7. Answer: (b) Uttar Pradesh

The correct answer is Uttar Pradesh.

Key Points

• Indian Railways

• It is the lifeline of the nation providing transportation facilities over the length and breadth of the country.

• Its vision is to provide efficient, affordable, customer-focused, environmentally sustainable integrated transportation solutions and to be the vehicle of inclusive growth, connecting regions, communities, ports and centres of industry, commerce, tourism and pilgrimage across the country.

• As of 31.03.2020, the route length of Indian Railways covered 67,956 km with a running track length of 99,235 km.

• The total trackage including yards, sidings etc. stood at 1,26,366 km.

• In India, the largest route kilometers are in Uttar Pradesh with 8726 kilometers. This comes out to be 13.6% of India's total Route Kilometers. The Five states with the largest route kilometres are as follows:

• Uttar Pradesh: 8,808. Hence, Option 2 is correct.

• Rajasthan: 5,998

• Maharashtra: 5,829

• Gujarat: 5,301

• Andhra Pradesh: 3,965

Important Points

• The first railway line in India was opened for public traffic on 16 April 1853 between Mumbai and Thane over a distance of 34 km.

• Meanwhile, the construction of the railway lines was going on in the eastern part of the country, and the first section of the East Indian Railway, from Howrah to Hugli, a distance of 37 km was inaugurated on 15 August 1854.

Q8. Answer: (a) 1917

The correct answer is 1917.

Key Points

• Champaran Satyagraha of 1917

• It was the first civil disobedience movement in India.

• Champaran district is a historic region in Bihar, India, that is now divided into the East Champaran district and the West Champaran district.

• Farmers in this region revolted against the British in 1914 and 1916 over the conditions imposed on indigo cultivation.

• Earlier, similar conditions existed in Bengal, but as a result of a major uprising in 1859-61, the peasants there won their freedom from the indigo planters.

• Champaran is a district in the state of Bihar where tens of thousands of landless serfs, indentured labourers, and poor farmers were forced to grow indigo and other cash crops instead of food crops.

• The European planters had forced the peasants to grow indigo on 3/20 of the total land area (called the tinkathia system).

• When German synthetic dyes replaced indigo at the end of the nineteenth century, European planters demanded high rents and illegal dues from the peasants in order to maximize their profits before the peasants could switch to other crops.

• The first Satyagraha movement, inspired by Mahatma Gandhi, took place in the Bihar district of Champaran in 1917. Hence, Option 1 is correct.

• The Champaran Satyagraha was the first to be launched, but the term Satyagraha was first used in the Anti-Rowlatt Act agitation.

Q9. Answer: (b) 25

Given

n(A) = 14

n(B) = 13

n(A ∩ B) = 2

Formula used

n(A U B) = n(A) + n(B) - n(A ∩ B)

Calculation

n(A U B) = n(A) + n(B) - n(A ∩ B)

=> 14 + 13 - 2

=> 27 - 2

=> 25

Therefore There are 25 people in all.

Q10. Answer: (d) 2,400

Given

Capital of A = Rs. 6000

Capital of B = Rs. 8000

Calculation

Ratio of profit = 6000 : 8000

=> 3 : 4

Share of A's profit = (3/7) × 5600

=> 3 × 800

=> 2400

Therefore The share of A's is Rs. 2400

Q11. Answer: (a) Python

The correct answer is Python.

Key Points

• Python

• It is a powerful general-purpose programming language.

• Hence, Option 1 is correct.

• It is used in web development, data science, creating software prototypes, and so on.

• It was created by Guido van Rossum, and released in 1991.

• The most recent major version of Python is Python 3.

Additional Information

• Virus

• A computer virus is a malicious software program loaded onto a user’s computer without the user’s knowledge and performs malicious actions.

• The term 'computer virus' was first formally defined by Fred Cohen in 1983.

• Computer viruses never occur naturally.

• They are always induced by people. Once created and released, however, their diffusion is not directly under human control.

• Examples of Virus

• Code Red

• It was a computer worm observed on the Internet on July 15, 2001.

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• It attacked computers running Microsoft's IIS web server.

• Conficker

• It is a computer worm developed by malware authors to infect Windows computers with the vulnerability (MS08-067) and spread the infection to other such vulnerable Windows computers connected to the network without any human intervention. It is also called Downadup.

• Sasser

• It is a computer worm that affects computers running vulnerable versions of the Microsoft operating systems Windows XP and Windows 2000.

• Sasser spreads by exploiting the system through a vulnerable port.

Q12. Answer: (b) 0.1

Given

$(0.8 \times 0.8 \times 0.8 - 0.7 \times 0.7 \times 0.7)/(0.8 \times 0.8 + 0.56 + 0.7 \times 0.7)$

Formula used

$(a^3 - b^3) = (a - b)(a^2 + ab + b^2)$

Calculation

$[(0.8)^3 - (0.7)^3]/(0.8 \times 0.8 + 0.56 + 0.7 \times 0.7)$

$\Rightarrow (0.8 - 0.7)[(0.8)^2 + 0.56 + (0.7)^2]/[(0.8)2 + 0.56 + (0.7)2]$

$\Rightarrow (0.8 - 0.7)$

$\Rightarrow 0.1$

Therefore $(0.8 \times 0.8 \times 0.8 - 0.7 \times 0.7 \times 0.7)/(0.8 \times 0.8 + 0.56 + 0.7 \times 0.7)$ is 0.1

Q13. Answer: (c) 4

Given

12 : 51 :: x : 17

Concept used

Product of the extremes = Product of the means

for example a : b : : c : d

a and d are extremes terms and b and c are means.

a : b : : c : d

$a \times d = b \times c$

Calculation

12 : 51 :: x : 17

$\Rightarrow 12 \times 17 = 51 \times x$

$\Rightarrow x = (12 \times 17)/51$

$\Rightarrow x = 4$

Therefore x is 4

Q14. Answer: (c) $\pi(4a^2 - b^2)$

Given

Outer radius of circle = 2a

The inner radius of circle = b

Formula used

Area of circle = πr^2

where r is the radius of the circle

Calculation

Outer radius, R = 2a

Inner radius, r = b

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

$\Rightarrow \pi[(2a)^2 - (b)^2]$

$\Rightarrow \pi(4a^2 - b^2)$

Therefore The area of the circle is π(4a2 - b2).

Q15. Answer: (a) Some locks are doors

The least possible Venn Diagram is as follows:-

Conclusions:-

1. Some locks are doors → Follows, (as can be seen in the Venn diagram, a part of locks is related to doors)
2. All locks are doors → Does not follow (it is possible but not definite)
3. All doors are keys → Does not follow (it is possible but not definite)
4. No lock is door → Does not follow (this is not possible because some locks are doors)

Hence, 'option 1' is the correct answer.

Q16. Answer: (c) 33 days

Given

Mohan is twice as good as Kamlesh

Mohan and Kamlesh together complete a work in 22 days

Calculation

let Mohan complete the work in x days

then, Kamlesh completes the work in 2x days

work done by Mohan and Kamlesh in 1 day = (1/x) + (1/2x)

According to question

(1/x) + (1/2x) = (1/22)

=> (2x + x)/(x × 2x) = 1/22

=> $3x/2x^2 = 1/22$

=> 3/2x = 1/22

=> x = (3 × 22)/2

=> x = 33 days

Therefore Mohan alone can finish the work in 33 days.

Q17. Answer: (b) 33/7 days

Given

A complete a work in 6 days

B complete a work in 12 days

C complete a work in 24 days

Concept

First find the work done by A, B and C in 1 day. Then, add the one day work of A, B and C.

Calculation

Work done by A in 1 day = 1/6

work done by B in 1 day = 1/12

Work done by C in 1 day = 1/24

Work done by A, B and C in 1 day = (1/6) + (1/12) + (1/24)

=> (4 + 2 + 1)/24

=> 7/24

Work complete by A, B and C in 24/7 days. i.e. 3 3over7 days

Therefore They all together will complete the work in 33/7 days.

Q18. Answer: (b) 85

The logic followed here is-

Similarly,

Hence, 'option 2' is the correct answer.

Q19. Answer: (a) Tibetan Independence Movement

The correct answer is Tibetan Independence Movement.

Key Points

• Bhaichung Bhutia

• He is also known as the Sikkimese Sniper.

• He is a former Indian national footballer and is considered the epitome of the rise of Indian football.

• He was born on 15 December 1976 in Tinkitam, Sikkim, and played as a striker all his career.

• Bhutia is known for his powerful shots and his pinpoint accuracy in front of the goal.

• His hunger for goals and his passion for the game made him the father figure of Indian football.

• Bhaichung has also captained the national side and currently plays the role of manager at the Sikkim state football club.

• Bhutia has represented the following teams - India, East Bengal, JCT Mills, Bury, Mohun Bagan, Perak FA, Selangor MK Land, and United Sikkim.

• Bhaichung Bhutia made his club professional debut in 1993 for Calcutta-based East Bengal where he would make nine appearances, scoring 4 goals in the league.

• In 2008, He had refused to carry the Olympic torch to show support and solidarity for the people of Tibet and their struggle.

• Hence, Option 1 is correct.

Q20. Answer: (d) Humming Bird

The correct answer is Humming Bird.

• The hummingbird is the only bird that can fly in any direction.

• The unique architecture of its wings enables it to fly forward, backward, straight up and down or remain suspended in the air.

• The name "hummingbird" is given to the bird because of the humming sound made by their throbbing wings that flap at a high frequency and this frequency is audible to humans.

Additional Information

• Penguins are a group of aquatic flightless birds.

• They live almost exclusively in the Southern Hemisphere: only one species, the Galapagos penguin, is found north of the equator.

• Highly adapted to life in water, penguins have dark and counter-shaded white fins and flippers for swimming.

• Woodpeckers are part of the family Picidae, which also includes piculets, rhinekes, and sapsuckers. Members of this family are found worldwide except in Australia, New Guinea, New Zealand, Madagascar, and the extreme polar regions.

• The house sparrow is a bird of the sparrow family Passeridae, found in most parts of the world.

Q21. Answer: (d) ISRO

The correct answer is ISRO.

• GSAT 7 satellites are advanced satellites developed by the Indian Space Research Organization (ISRO) to meet the communication needs of the Defense Services.

• GSAT-7A is an advanced military communication satellite intended primarily for the Indian Army with a 30% capacity utilization for the Indian Air Force.

• The GSAT-7A weighing 2,250 kg (4,960 lb) was successfully launched on 19 December 2018 by the GSLV Mk II F11 rocket from the second launch pad of the Satish Dhawan Space Center.

• This three-stage launch vehicle, 51 meters tall, has a lift-off mass of about 421 tonnes and an indigenously developed cryogenic stage.

Additional Information

• Indian Space Research Organization

• Headquarters: Bengaluru

• Founder: Vikram Sarabhai

• Founded: 15 August 1969

• The Department of Science and Technology is a department within the Ministry of Science and Technology in India.

• The Military Engineer Service (MES) is an inter-service organization with military and civilian components of its officers and subordinate staff. MES is one of the oldest and largest government defense infrastructure-development agencies in India.

• The All India Institute of Medical Sciences (AIIMS) is a group of autonomous public medical universities of higher education under the jurisdiction of the Ministry of Health and Family Welfare, Government of India.

• Established on 8 February 1956.

Q22. Answer: (d) Decline in girl child sex-ratio

The correct answer is Decline in girl child sex ratio.

• In 2015, the Indian government introduced the Beti Bachao, Beti Padhao (BBBP) scheme to address concerns about gender discrimination and women empowerment in the country.

• Beti Bachao, Beti Padhao (BBBP) was launched by the Hon’ble Prime Minister, Shri Narendra Modi, as one of the flagship programs of the Government, to address the declining Child Sex Ratio and related issues of empowerment of women on a

life-cycle continuum.

Key Points

• Objectives of the Scheme:

• Prevent gender-biased sex selective elimination

• Ensure survival & protection of the girl child

• Ensuring education and participation of the girl child.

Additional Information

• Other Initiatives for Girl Children

• UJJAWALA: To tackle the problem of trafficking, it is a Comprehensive Scheme for Prevention of Trafficking and Rescue, Rehabilitation, and Re-Integration of Victims of Trafficking for Commercial Sexual Exploitation.

• Kishore Health Card: To record the information about the weight, height, and Body Mass Index (BMI) of Adolescent Girls (AGs). These health cards for AGs are maintained at the Anganwadi centers (AWCs).

• Scheme for Adolescent Girls: To facilitate, educate and empower Adolescent Girls (AGs) so as to enable them to become self-reliant and aware citizens.

Q23. Answer: (a) Punjab National Bank

The correct answer is Punjab National Bank.

• The first bank fully managed by Indians was Punjab National Bank, established in 1895 in Lahore.

• Punjab National Bank not only survives to date but is also one of the largest banks in India.

• Headquarters: New Delhi

• Founder: Dyal Singh Majithia

• Founded: 19 May 1894, Lahore, Pakistan

Additional Information

• Dena Bank was a state-owned which merged with Bank of Baroda in 2019.

• It was headquartered in Mumbai and had 1,874 branches.

• The bank was established in 1938 and was nationalized by the Government of India in 1969.

• Bank of India is an Indian nationalized bank.

• It is owned by the Ministry of Finance, Government of India, headquartered at Bandra Kurla Complex, Mumbai.

• Established in 1906, it has been owned by the government since nationalization in 1969.

• Allahabad Bank was an Indian nationalized bank headquartered in Kolkata, India.

• Established in Allahabad in 1865 and nationalized by the Government of India in 1969, the bank provided banking and financial services for 155 years, until it was merged with Indian Bank in 2020.

Q24. Answer: (a) prime

Concept used:

1. A number which is divisible by 2 is called an even number.

2. A number which is not divisible by 2 is called an odd number.

3. A number which has factors other than 1 and itself is called composite number.

4. A number which has only factors are 1 and the number itself is called a prime number.

Therefore The number is a prime number.

Q25. Answer: (d) Education

The logic followed here is-

• Court is a place where justice is provided.

• Similarly, college is a place where education is provided to all.

Hence, 'option 4' is the correct answer.

Q26. Answer: (d) Memory

Memory is NOT correct.

• Memory is not a hardware component of a computer.

• Computer hardware includes the physical parts of a computer, such as a case, central processing unit (CPU), random access memory (RAM), monitor, mouse, keyboard, computer data storage, graphics card, sound card, speakers, and motherboard.

Key Points

• Input Device: A piece of equipment/hardware that helps us to enter data into a computer is called an input device. For example

keyboard, mouse etc.

• Output Device: A piece of equipment/hardware that returns the result of the input entered, once processed (i.e. converts data from machine language into human-understandable language), is called an output device. For example printers, monitors, etc.

Additional Information

• Software is a collection of instructions that tell a computer how to work.

• This is in contrast to the hardware from which the system is built and which actually works.

• Some examples of commonly used application software include Web browsers, Word processors, Multimedia software, Spreadsheet software, Email clients, and Graphics software.

Q27. Answer: (c) Development Authority

Development Authority is NOT correct.

• Development Authority is not a part of the Local Government in India.

• Development Authority means a person or body appointed as a Development Authority as contemplated by and in accordance with the Municipal Government Act.

• It was envisaged that the development authorities would help in planning, implementing and coordinating development activities in a structured manner.

• The actual implementation of urban projects and master plans has started after the formation of the Urban Development Authorities.

Key Points

• Local government in India refers to the government jurisdiction below the state level.

• A uniform three-tier structure of

• panchayats at village (Gram Panchayat - GP),

• intermediate or block (Panchayat Samiti - PS) and

• district (Zilla Parishad - ZP) levels.

• All the seats in the Panchayat at each level are to be filled by election from the respective regional constituencies.

Additional Information

• India is a federal republic with three regions of government: central, state and local.

• The 73rd and 74th Constitutional Amendments provide recognition and protection to local governments and in addition, each state has its own local government legislation.

• Since 1992, local government in India takes place in two different forms.

• Urban areas covered by the 74th Amendment to the Constitution have municipalities, but they derive their powers from individual state governments, while the powers of rural areas have been formalized under the Panchayati Raj system under the 73rd Amendment to the Constitution.

Q28. Answer: (d) $2^{12} \times 3^6$

Given

82×63 and 46×93

Concept

$(a^m)^n = a^{(mn)}$

Calculation

L.C.M of 82×63 and 46×93

$82 \times 63 = ((2)^3)^2 \times (2 \times 3)^3$

$\Rightarrow 2^6 \times 2^3 \times 3^3$

$\Rightarrow 2^9 \times 3^3$

$46 \times 93 = ((2)^2)^6 \times ((3)^2)^3$

$\Rightarrow 2^{12} \times 3^6$

L.C.M of 82×63 and $46 \times 93 = 2^{12} \times 3^6$

Therefore L.C.M of 82×63 and 46×93 is $2^{12} \times 3^6$

Q29. Answer: (c) 9

Given:

ΔABC and ΔPQR are similar and rmBC/QR = 1/3

Concept:

Theorem: If two triangles are similar, then the ratio of the area of both triangles is proportional to the square of the ratio of their

corresponding sides.

Calculation:

ar(PQR)/ar(ABC) = $(QR)^2/(BC)^2$

=> $(3)^2/(1)^2$

=> 9

Therefore ar(ΔPQR)/ar(ΔABC) is 9

Q30. Answer: (b) MN Roy

The correct answer is MN Roy.

• People's plan was prepared by M.N. Roy.

• M.N. Roy, a radical humanist leader, formulated the People's Plan in 1945

• The plan gave priority to agriculture and production and was drafted on behalf of the Indian Federation of Labour.

• Jaiprakash Narayan came up with the Sarvodaya Plan in 1950.

• Nehru-Mahalanobis Model came in the year 1955.

• Bombay plan was drawn up by a group of Industrialists in Bombay city, Mr. JRD Tata was among those industrialists.

• National Planning Committee was formed by Indian National Congress in 1938 and it was chaired by S C Bose.

Important Points

• The Constitution came into force on 26 January 1950.

• Subsequently, Planning Commis-sion was set up on 15 March 1950 and the plan era started on 1 April 1951 with the launch-ing of the First Five Year Plan (1951-56).

• The idea of economic planning for five years was taken from the Soviet Union under the socialist influence of first Prime Minister Pt. Jawahar Lal Nehru.

Additional Information

• Sir Chintaman Dwarkanath Deshmukh was an Indian civil servant and the first Indian to be appointed governor of the Reserve Bank of India by British Raj authorities in 1943.

• Vallabhbhai Jhaverbhai Patel, endeared as Sardar, was an Indian statesman.

• He served as the first deputy Prime Minister of India from 1947 to 1950.

• Jayaprakash Narayan, popularly known as JP or Lok Nayak, was an Indian independence activist, theorist, socialist and political leader.

• He is best remembered for leading the opposition in the mid-1970s against Prime Minister Indira Gandhi, whom he called for a "complete revolution" to overthrow.

Q31. Answer: (d) 143

The logic followed here is-

Hence, 'option 4' is the correct answer.

Shortcut Trick On the first look in the series the numbers are increasing in multiples. So, it can save your time if you look for multiplication instead of difference.

Q32. Answer: (d) Myopia

The correct answer is Myopia.

Key Points

• In nearsightedness (myopia) the focus point is in front of the retina, making distant objects appear blurry.

• Nearsightedness (myopia) is a common vision condition in which you can see objects near you clearly, but distant objects are blurry.

• This condition is also called nearsightedness.

• Myopia is not a very complex disability.

• This can be easily corrected by wearing a concave lens.

• A concave lens causes parallel rays of light to diverge before they converge and focus on the retina.

Additional Information

• A cataract is a clouding of the normally clear lens of the eye.

• For people with cataracts, looking through a cloudy lens is like looking through a frosty or foggy window.

• Presbyopia is the gradual loss of your eye's ability to focus on nearby objects. It is a natural, often annoying part of aging.

• Presbyopia usually becomes noticeable in your early to mid-40s and tends to get worse until age 65.

• Hypermetropia (long vision) is where the eye is smaller than normal or the cornea is too flat, meaning that the light rays are

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focused behind the retina.

• Rays of light from near objects, such as the pages of a book, cannot be focused clearly by the retina.

Q33. Answer: (d) 1952

The correct answer is 1952.

• The first Lok Sabha was constituted on 17 April 1952 after India's first general election.

• The first Lok Sabha lasted its full term of five years and was dissolved on 4 April 1957.

• The first session of this Lok Sabha began on 13 May 1952.

Key Points

• General elections in India were held between 25 October 1951 and 21 February 1952.

• They were the first elections to the Lok Sabha after independence in August 1947.

• The total Lok Sabha seats were 489 and the total eligible voters were 17.3 crores.

Additional Information

List of First in India (Female):

First Woman Speaker of Lok Sabha	Meira Kumar (2009)
India’s First Woman President	Pratiba Patil
India’s First Woman Prime Minister	Indira Gandhi
India’s First Woman Governor	Sarojini Naidu
India’s First Woman IPS Officer	Kiran Bedi
First Woman Chief Minister of State	Sucheta Kripalani
First Woman Union Minister	Rajkumari Amrita Kaur
First Woman President of INC	Annie Besant
First Woman Judge of Supreme Court	Meera Sahib Fatima Bibi

Q34. Answer: (a) Pradhan Mantri Jan Dhan Yojana

The correct answer is Pradhan Mantri Jan Dhan Yojana.

Key Points

• Pradhan Mantri Jan-Dhan Yojana (PMJDY)

• Pradhan Mantri Jan-Dhan Yojana (PMJDY) is National Mission for Financial Inclusion to ensure access to financial services, namely, Banking/Savings & Deposit Accounts, Remittance, Credit, Insurance, Pension in an affordable manner. Hence, Option 1 is correct.

• While launching the program on 28^(th) August 2014, the Prime Minister described the occasion as a festival to celebrate the liberation of the poor from a vicious cycle of poverty.

• A key initiative toward the commitment to financial inclusion is the Pradhan Mantri Jan Dhan Yojna (PMJDY).

• Financial inclusion may be defined as the process of ensuring access to financial services and timely and adequate credit where needed by vulnerable groups such as weaker sections and low-income groups at an affordable cost.

• Financial Inclusion is a national priority of the Government as it is an enabler for inclusive growth.

• It is important as it provides an avenue for the poor for bringing their savings into the formal financial system, an avenue to remit money to their families in villages besides taking them out of the clutches of the usurious money lenders.

Additional Information

• MGNREGA

• It is one of the largest work guarantee programs in the world which was launched in 2005.

• The primary objective of the scheme is to guarantee 100 days of employment in every financial year to adult members of any rural household willing to do public work-related unskilled manual work.

• Unlike earlier employment guarantee schemes, MGNREGA aims at addressing the causes of chronic poverty through a rights-based framework.

• JNNURM

• It was launched on 3rd December 2005 and closed in 2014.

• This scheme is now succeeded by Atal AMRUT Mission.

• Pradhan Mantri Bima Suraksha Yojana

• It was launched on 9^(th) May 2015.

• The aim of the scheme is to enhance the level of insurance penetration in the country and to provide insurance cover to common people, especially the poor and the under-privileged sections of society.

• It is a government-backed accident insurance scheme in India.

• The scheme is implemented by the Ministry of Finance.

Q35. Answer: (c) Mahmud Ghazni

The correct answer is Mahmud Ghazni.

Key Points

• Al-Biruni

• He was the Persian scholar who accompanied Mahmud Ghaznavi to Afghanistan and India.

• His celebrated works are Kitab-ul-Hind and Tahkeek-e- Hind.

• It is notable that famous scholars Utbi and Firdausi were also in the court of Mahmud Ghaznavi.

• Al-Biruni was born in 973 AD at Kath, the capital of the Afrighid dynasty of Khwarezm in Central Asia, in the Khiza area (Uzbekistan).

• He spent much of his life in Ghazni, the capital of the Ghaznavids in modern-day central-eastern Afghanistan and visited India in 1017. Hence, Option 3 is correct.

• He studied Islamic jurisprudence, theology, language, mathematics, astronomy, medicine, philosophy, and most other sciences throughout the first twenty-five years of his life in Khwarezm.

Important Points

• He was a gifted linguist, fluent in Khwarezmian, Persian, Arabic, and Sanskrit, as well as Greek, Hebrew, and Syriac.

• Most academics, including Al-Biruni, were brought to Ghazni, the capital of the Ghaznavid dynasty, in AD 1017, when Mahmud of Ghazni was the monarch.

• In the 11th century, Abu al-Rayhan Muhammad was designated a royal astrologer and accompanied Mahmud of Ghazni on his incursions into India (most likely in Punjab), where he lived for a few years. (Alberuni was 44 years old when he accompanied Mahmud of Ghazni to India).

• He was fascinated by Indian culture and studied Sanskrit, Indian philosophy, and the country's socio-economic situation.

Additional Information

• Mahmud of Ghazni (971 to 1030)

• A Turkish family called Gamini of the Ghaznavid dynasty ruled Ghazni in Afghanistan.

• He was the first Turkish who invaded India.

• He attacked India only for wealth.

• He attacked India seventeen times between 1000 and 1027 AD.

• In 1001 A.D. he made his first invasion of India.

• Mahmud’s most important expedition in India was against the Somnath temple in 1025 A.D., located on the coast of Kathiawar, Gujrat. Raja Bhima Dev the ruler of Kathiawar and his followers escaped from the place for the fear of Mahmud.

Q36. Answer: (c) 11,000

Given

Total capital = Rs. 33000

Total profit = Rs. 15,000

Calculation

C's profit = 15000 - (4500 + 5500)

=>15000 - 10,000

=> 5000

Ratio of A, B and C profit = 4500 : 5500 : 5000

=>9 : 11 : 10

C's capital = (10/30) × 33000

=>Rs. 11,000

Therefore C's capital is Rs. 11,000

Q37. Answer: (b) Ornithology

The correct answer is Ornithology.

Key Points

• Ornithology

• The scientific study of birds is known as Ornithology.

• Hence, Option 2 is correct.

• It evolved in Europe during the late 16th century.

• Ornithologists are people who study the behavior, physiology, and conservation of birds and bird habitats.

• Dr.Salim Ali (1896–1987) is known as the Father of Indian Ornithology.

Additional Information

Term	Description
Herpetology	Herpetology is the branch of zoology concerned with the study of amphibians and reptiles.
Anthropology	Anthropology is the study of people, past and present, with a focus on understanding the human condition both culturally and biologically.
Ophthalmology	Ophthalmology is the study of the anatomy, physiology, and diseases of the eye.

Q38. Answer: (b) 5/3 > 6/4 > 7/5

Given

5 : 3, 7 : 5 and 6 : 4

Concept

First convert all the fractions into same denominator by taking the L.C.M. and then compare the numerator of each fraction.

Calculation

L.C.M of 3, 5 and 4 = 60

60 ÷ 3 = 20

(5 × 20)over(3 × 20) = 100over 60

60 ÷ 5 = 12

(7 × 12)over(5 × 12) = 84over60

60 ÷ 4 = 15

(6 × 15)over(4 × 15) = 90over60

100over60 > 90over60 > 84over60

5over3 > 6over4 > 7over5

Q39. Answer: (b) United Nations Environment Programme

The correct answer is United Nations Environment Programme.

Key Points

• United Nations Environment Programme (UNEP) was founded as a result of the UN Conference on the Human Environment (Stockholm Conference) in 1972.

• Headquarter: Nairobi, Kenya.

• It coordinates the UN's environmental activities, assisting developing countries in implementing environmentally sound policies and practices.

Additional Information

• Its activities cover a wide range of issues regarding the atmosphere, marine and terrestrial ecosystems, environmental governance and green economy.

• UNEP has also been active in funding and implementing environment related development projects.

• UNEP is also one of several Implementing Agencies for the Global Environment Facility (GEF) and the Multilateral Fund for the Implementation of the Montreal Protocol.

• The three main sources of funding of the UN Environment are the UN Regular Budget, the Environment Fund, the core funding that enables UN Environment to implement its global and regional work, and Earmarked Contributions.

• UN Environment has sponsored the development of solar loan programs, with attractive return rates, to buffer the initial deployment costs and entice consumers to consider and purchase solar PV systems.

• The most famous example is the solar loan program sponsored by UN Environment helped 100,000 people finance solar power systems in India.

• Success in India’s solar program has led to similar projects in other parts of the developing world like Tunisia, Morocco,

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Indonesia and Mexico.

Important Points

• United Nations:

• The UNO was formed on 24 October 1945.

• At present, 193 countries are members of the UN.

• South Sudan is the latest and the 193rd member to join the UN in 2011

• The UN Charter came into force on October 24, 1945, when the Governments of China, France, the UK, the Soviet Union, the USA and a majority of other counties had ratified it.

• The headquarters of the UN is situated in New York (USA).

• António Guterres is the current and the ninth Secretary-General of the United Nations

Q40. Answer: (c) Anglo-Indian

The correct answer is Anglo-Indian.

Key Points

• Between 1952 and 2020, two seats were reserved in the Lok Sabha, the lower house of the Parliament of India, for members of the Anglo-Indian community.

• These two members were nominated by the President of India on the advice of the Government of India.

Confusion Points

• In January 2020, the Anglo-Indian reserved seats in the Parliament and State Legislatures of India were discontinued by the 126th Constitutional Amendment Bill of 2019, when enacted as the 104th Constitutional Amendment Act, 2019.

Additional Information

• Twelve members are nominated to the Rajya Sabha by the President of India for a six-years term for their contributions to arts, literature, sciences, and social services.

• This right has been bestowed upon the President according to the Fourth Schedule (Articles 4(1) and 80(2)) of the Constitution of India.

Q41. Answer: (b) Bhor Ghat Pass

The correct answer is Bhor Ghat Pass.

Key Points

• Bhor Ghat Pass is between Kasara and Khandala on the Mumbai Pune Express Highway.

• Bhor Ghat, is a mountain passage located between Palasdari and Khandala for railway and between Khopoli and Khandala on the road route in Maharashtra, India.

Additional Information

• Thaal Ghat or Kasara Ghat is between Nashik and Mumbai while travelling via Kalyan.

• Kumbharli Ghat is located near the Koyna Dam on its eastern side, it connects Satara district to the Konkan region or coastal Ratnagiri.

• Amba Ghat is between Ratnagiri in the Konkan region and Kolhapur in the southern end of central Maharashtra, on the national highway no. 204

• Malshej Ghat is near the border of the Pune and Thane districts, situated in Pune district.

Q42. Answer: (b) 10 m

Given

Area of panel = 110 m^2

Length of panel = breadth + 10% of breadth

Formula used

Area of rectangular panel = length × breadth

Calculation

let the breadth of rectangular solar panel is x m

so, length of rectangular solar panel = x + 10% of x

=> 110x/100

Area of panel = x × (110x/100)

=> $(11x^2/10) = 110$

=> $x^2 = (110 \times 10)/11$

=> $x^2 = 100$

=> x = 10m

Therefore Breadth of panel is 10 m.

Q43. Answer: (b) 0

Given

[cosec(75° + θ) – sec(15° – θ) – tan(55° + θ) + cot(35° – θ)]

Formula used

sec(90° - θ) = cosecθ

cot(90° - θ) = tanθ

Calculation

[cosec(75° + θ) – sec(15° – θ) – tan(55° + θ) + cot(35° – θ)]

=> [cosec(75° + θ) - sec[90° - (75 + θ)] - tan(55° + θ) + cot[90° - (55° + θ)]

=> cosec(75° + θ) - cosec(75° + θ) - tan(55° + θ) + tan(55° + θ)

=> 0

Therefore The value of [cosec(75° + θ) – sec(15° – θ) – tan(55° + θ) + cot(35° – θ)] is 0.

Q44. Answer: (d) Agriculture

The correct answer is Agriculture.

Key Points

• Factors responsible for Deforestation:

• Agricultural Activities

• According to the FAO, agriculture leads to around 80% of deforestation.

• Due to the overgrowing demand for food products, a huge amount of trees are felled to grow crops, and 33% of agriculture-caused deforestation is because of subsistence agriculture.

• Hence it is one of the major factors.

• Livestock Ranching

• Livestock is believed to be responsible for about 14% of global deforestation.

• Farmers often clear the land by cutting down trees and burning them to raise livestock and grow food.

• Illegal Logging

• Apart from this, wood-based industries like paper, match-sticks, furniture, etc. also need a substantial amount of wood supply.

• Urbanization

• Further, to gain access to these forests, the construction of roads is undertaken; here again, trees are chopped to build roads.

• Desertification of Land

• Some of the other factors that lead to deforestation are also partly natural and partly anthropogenic, like desertification of land.

• Mining

• Oil and coal mining requires a considerable amount of forest land. Apart from this, roads and highways have to be built to make way for trucks and other equipment.

• Overpopulation

• The overpopulation requires more land to establish housing and settlements. It generates a significant need for food and farmland to grow food and raise livestock. It automatically requires many more roads and highways for transport and communication—all these results in deforestation.

Q45. Answer: (c) 1992

The correct answer is 1992.

Key Points

• The Earth Summit 1992 is also known as The United Nations Conference on Environment and Development (UNCED) held at Rio de Janeiro (Brazil).

• The Outcome of Earth Summit 1992 -

• Rio Declaration - Principle intended to guide countries in future sustainable development.

• The Rio Declaration on Environment and Development was approved by the United Nations in the year 1992.

• Agenda 21 - Non-Binding Action plan of the United Nations with regard to sustainable development.

• Forest Principles - Non-legally binding documents on Conservation and Sustainable development of all types of forest.

Additional Information

• Rio Summits:

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Rio +5	**1997**	**New York, United States**	**Special session to appraise the status of Agenda 21**
Rio+10	2002	Johannesburg Declaration	World Summit on Sustainable Development
Rio +20	2012	Rio de Janeiro	UN conference on Sustainable development

Q46. Answer: (b) 730

The logic followed here is-

Similarly,

Hence, 'option 2' is the corrrect answer.

Q47. Answer: (b) Bull

The correct answer is Bull.

Important Points

• The Harappan seal is possibly the most distinctive artifact of the Harappan or Indus valley civilization.

• Made of a stone called steatite, seals like this one often contain animal motifs and signs from a script that remains undeciphered.

• They are engraved with images of wild or domestic animals, humans, and fantastic creatures.

• The bull was frequently seen on the seals of the Harrapan Civilisation.

• Harappan seals and materials were found in Sumerian, Mesopotamian Oman, Bahrain, and Iran.

• Pictures of ships, and boats have also been found on seals that throw light on Harappan contacts in far-off places.

Q48. Answer: (b) 2

Given

$\sin\theta + \text{cosec}\theta = 2$

Formula used

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

$\text{cosec}\theta = 1\sin\theta$

Calculation

$\sin\theta + \text{cosec}\theta = 2$

squaring on both sides

$(\sin\theta + \text{cosec}\theta)^2 = (2)^2$

$\sin^2\theta + 2 \times \sin\theta \times \text{cosec}\theta + \text{cosec}^2\theta = 4$

$\Rightarrow \sin^2\theta + 2 \times \sin\theta \times (1/\sin\theta) + \text{cosec}^2\theta = 4$

$\Rightarrow \sin2\theta + 2 + \text{cosec}2\theta = 4$

$\Rightarrow \sin^2\theta + \text{cosec}^2\theta = 4 - 2$

$\Rightarrow \sin^2\theta + \text{cosec}^2\theta = 2$

squaring on both sides

$(\sin2\theta + \text{cosec}2\theta)^2 = (2)^2$

$\sin^4\theta + 2 \times \sin^2\theta \times \text{cosec}^2\theta + \text{cosec}^4\theta = 4$

$\Rightarrow \sin2\theta + 2 \times \sin^2\theta \times (1/\sin^2\theta) + \text{cosec}2\theta = 4$

$\Rightarrow \sin2\theta + 2 + \text{cosec}2\theta = 4$

$\Rightarrow \sin4\theta + \text{cosec}4\theta = 4 - 2$

$\Rightarrow \sin4\theta + \text{cosec}4\theta = 2$

squaring on both sides

$(\sin4\theta + \text{cosec}4\theta)^2 = (2)^2$

$\Rightarrow \sin^8\theta + 2 \times \sin^4\theta \times \text{cosec}^4\theta + \text{cosec}^8\theta = 4$

$\Rightarrow \sin8\theta + 2 \times \sin4\theta \times (1/\sin^4\theta) + \text{cosec}8\theta = 4$

$\Rightarrow \sin8\theta + 2 + \text{cosec}8\theta = 4$

$\Rightarrow \sin8\theta + \text{cosec}8\theta = 4 - 2$

$\Rightarrow \sin8\theta + \text{cosec}8\theta = 2$

Therefore $\sin8\theta + \text{cosec}8\theta$ is 2

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Q49. Answer: (c) The President

The correct answer is President.

Important Points

• The power to summon and prorogue either House of Parliament or to dissolve the Lok Sabha vests with the President.

• The Indian Constitution provides that the Parliament shall consist of the President and the two houses i.e. Council of States (Rajya Sabha) and the House of People (Lok Sabha).

• Article 85 of the Constitution empowers President to summon each House of the Parliament as he/she thinks fit.

• The President can summon the houses at intervals not be more than six month's gap between the two sessions.

• It is mandatory to Parliament meet at least twice a year as per the Constitution of India.

Additional Information

• President shall hold office for 5 years

• He can also resign by writing under his hand addressed to the Vice-President (doctrine of necessity) communicated to the Speaker.

• He may also be impeached as per Article 61 for violation of the constitution.

• Presidential continue to hold his office until his successor enters his office.

• President is eligible for re-election.

• Qualification of president

• he is a citizen of India.

• he must be of 35 years.

• he must be qualified for the election as a member of the house of the people.

• he shall not hold any office of profit.

Q50. Answer: (c) 1393.194

Given

1254 + 125.4 + 12.54 + 1.254

Calculation

1254

125.4

12.54

+1.254

1393.194

Therefore 1254 + 125.4 + 12.54 + 1.254 is 1393.194

Q51. Answer: (b) TUO

The logic followed here is:-

Thus, 'It' is coded as 'TUO'.

Hence, 'option 2' is the correct answer.

Q52. Answer: (c) Ingestion, Digestion, Absorption, Egestion

The correct answer is Ingestion, Digestion, Absorption, Egestion.

Key Points

• The digestive system includes 5 steps, They are in order as follows::

• Ingestion

• Digestion

• Absorption

• Assimilation

• Egestion

• Ingestion: It is the process of taking food into the body by the animal.

• Digestion: It is the process in which food containing larger molecules is converted or break down into small water-soluble molecules.

• Absorption: It is the process in which digested food goes into the bloodstream.

• Assimilation: It is the process in which absorbed food is taken up by the body cells for their growth and energy.

• Egestion: It is the process in which undigested is discharged as faeces.

Additional Information

Human digestive system-

• The size of an adult's digestion pipe in a human body is 30 feet.

• The small intestine is the longest part of the digestive system.

• Water and mineral are absorbed by the large intestine.

• Digestion of cellulose is absent in the human body.

• The appendix is a vestigial organ in the human body.

Q53. Answer: (b) Ambika Charan Majumdar

The correct answer is Ambika Charan Majumdar.

Key Points

• Lucknow Session of Congress in 1916.

• President: Ambika Charan Majumdar.

• Famous for the Lucknow Pact and Unification of Moderates and Extremists.

• Since, the Surat Split, after about 10 years, both the Moderates and Extremists were united

• Also, Congress and the Muslim League signed the Lucknow Pact to build political consensus.

• It happened because, like Extremists, Muslim League also adopted the demand for self-government in its Lucknow session in 1913.

• Also, In its 1912 Calcutta session, Leauge decided to work with other organizations for the protection of the interests of the Muslims.

• Apart from Tilak and Annie Besant, Jinnah played a vital role in the unification of the Muslim League and Congress.

• Sarojini Naidu awarded Jinnah with the title of Ambassador of Hindu-Muslim Unity.

• The signing of the Lucknow pact and unification led the INC to become the sole voice of the whole Indian mass, be it Hindu or Muslim or any religion, without any internal rift.

Additional Information

Important Congress sessions:

Sessions of INC Held at	Year	President
Bombay	1885	Womesh Chandra Banerjee
Calcutta	1896	Rahimtullah Sayani
Lucknow	1899	Romesh Chandra Dutt
Banaras	1905	Gopal krishna Gokhale
Calcutta	1906	Dadabhai Naoroji
Surat	1907	Rash Bihari Ghosh
Lucknow	1916	A. C. Majumdar
Calcutta (Special Session)	1920	Lala Lajpat Rai
Nagpur	1920	C. Vijayaraghavachariar
Madras	1927	Dr. M. A. Ansari
Bombay	1934	Rajendra Prasad
Tripuri	1939	Subhas Chandra Bose

Q54. Answer: (c) 1

Given

tanA = √3

Concept used

sinθ = side opposite to θ /Hypotenuse

cosθ = side adjacent to θ/Hypotenuse

Calculation

AC = √(3)² + 1

AC = √3 + 1

AC = √4

AC = 2

sinA = BC/AC = √3/2

cosC = BC/AC = √3/2

cosA = AB/AC = 1/2

sinC = AB/AC = 1/2

So,

sin A cos C + cos A sin C =

(√3/2) × (√3/2) + (1/2) × (1/2)

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

=> (3 +1)/4

=> 4/4

=> 1

Therefore sinAcosC + cosAsinC is 1

Q55. Answer: (c) Eratosthenes

The correct answer is Eratosthenes.

Key Points

• The term geography was first coined by Eratosthenes, a greek scholar (276-194 BC).

• The work of Eratosthenes is similar to what is now known as geographical analysis, and he introduced some of the language that is still used today.

• The Pre-Cambrian Period is the longest era in the world's history of classification.

• Eratosthenes is best known for being the first person to measure the Earth's diameter, which he did by using the detailed survey results that he was able to access in his library role; his calculation was remarkably precise.

• He was also the first, again with incredible precision, to measure the tilt of the Earth's axis.

• He developed the world's first global projection, integrating parallels and meridians based on his era's available geographic information.

Additional Information

• Herodotus is the father of History.

• Aristotle was a greek philosopher and scientist.

• His work contribution are in Metaphysics, Politics, Rhetoric and science.

• Plato described 'justice' as having and doing what is one's own. In other words, everybody does their own work.

Q56. Answer: (d) Digital Saksharta Abhiyan

The correct answer is Digital Saksharta Abhiyan.

• DISHA stands for Digital Saksharta Abhiyan.

Important Points

• Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA)(2016-17)

• The goal of the scheme is to make at least one person digitally literate in each family.

• There are four pillars of literacy in the modern age-Reading, writing, arithmetic and digital literacy.

• (PMGDISHA) focused on the fourth pillar i.e. digital literacy

• It is one of the largest digital literacy programs all over the world.

• initiated under Digital India Program would cover 6crore households in rural areas to make them digitally literate. Under it, The marginalized sections of society like SCs/STs, minorities, BPL families, and differently-abled will be a part of this scheme.

• Scheme format - Twenty hours of digital training is provided free of cost to rural persons in the age group of 14 to 60 years,People will be trained to operate tablets, computers, and smartphones.

Q57. Answer: (d) 2,00,000

Given

Rate of depreciation = 10%

Present value of machinery, M_P = Rs 1,62,000

Formula used

M_P = M_O(1 - r%)^t

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where M_P, M_O and t represents present value of machinery, original value of machinery and time respectively.

Calculation

$1,62,000 = M_O (1 - 10\%)^2$

$1,62,000 = M_O (90/100)^2$

$M_O = (1,62,000 \times 100 \times 100)/(90 \times 90)$

MO = 2,00,000

Therefore The value of machinery 2 years ago was Rs. 2,00,000

Q58. Answer: (a) Mahatma Gandhi

The correct answer is Mahatma Gandhi.

Important Points

• Mahatma Gandhi led the Quit India Movement.

• The Cripps Mission had failed, and on 8 August 1942, Gandhi made a call to Do or Die.

• He gave the slogan in his Quit India speech delivered in Bombay at the Gowalia Tank Maidan.

• The Quit India campaign was effectively crushed.

• The British refused to grant immediate independence, saying it could happen only after the war had ended.

• Communist Party of India was officially against the Quit India Movement.

Additional Information

Freedom Fighter	Slogan
Pandit Madan Mohan Malviya	“Satyameva Jayate”
Bal Gangadhar Tilak	“Swaraj Mera Janamsiddh Adhikar hai, aur mai ise lekar rahunga”
Bankim Chatterji	“Vande Mataram”
Muhammad Iqbal	“Sare Jahan Se Achha Hindustan Hamara”

Q59. Answer: (b) Son in law

• Preparing the family tree using the following symbols:

• Based on the information given in the question, the family tree will be as follows:

Thus, Sohan is the son-in-law of Rahul.

Hence, 'option 2' is the correct answer.

Q60. Answer: (d) Divide and Rule Policy of the British.

The correct answer is Divide and Rule Policy of the British.

Key Points

• The actual reason considered to be behind the Partition of Bengal by Lord Curzon was Divide and Rule Policy of the British.

• Partition of Bengal was announced on 19 July 1905 by Lord Curzon, the then Viceroy of India, and implemented on 16 October 1905.

• Lord Curzon was the then Viceroy of India and he announced the partition of Bengal.

• The stated reason was to ease the administration but the actual reason was to weaken the growing nationalism in Bengal.

• As per Curzon, after the partition, the two provinces would be Bengal (including modern West Bengal, Odisha, and Bihar) and Eastern Bengal and Assam.

Additional Information

• Annulment of Bengal

• The partition of Bengal was annulled in 1911.

• Partition of Bengal was cancelled by Lord Hardinge II.

• The capital of British India was moved to Delhi from Calcutta in 1911.

• Despite the annulment, the partition already succeeded in making a communal divide between Muslims and Hindus of Bengal.

Q61. Answer: (a) r25

The logic followed here is-

Alternate Method

Hence, 'option 1' is the correct answer.

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Q62. Answer: (b) 79

The logic followed here is-

• 29, 43, 59, 53, 89- All the given numbers are prime numbers.

Thus,

1. 96- Not a prime number
2. 79- Prime Number
3. 87- Not a prime number
4. 81- Not a prime number

Hence, 'option 2' is the correct answer.

Q63. Answer: (b) An electronic device that stores, retrieves and processes data.

The correct answer is An electronic device that stores, retrieves and processes data.

Important Points

• A computer is a machine that can store and process information.

• Most computers rely on a binary system, which uses two variables, 0 and 1, to complete tasks such as storing data, calculating algorithms, and displaying information.

• A computer is composed of hardware and software.

• Users add information to the computer.

• An electronic device that stores, retrieves, and processes data.

• Hence Option 2 is correct.

Q64. Answer: (b) Lucknow

The correct answer is Lucknow.

Key Points

• The 'Golden Triangle' tourist circuit in India does not connect Lucknow.

• India's 'Golden Triangle' is a tourist circuit that does not connect the city of Lucknow.

• India's golden triangle is a tourist circuit that connects the national capital Delhi, Agra, and Jaipur.

• The Golden Triangle is so-called because of the triangular shape formed by the locations of New Delhi, Agra, and Rajasthan on a map.

Additional Information

• Golden Triangle of India:

City	Famous Tourist Places
Delhi	• Humayun Tomb - Lotus Temple - India Gate - Jama Masjid - Akshardham Temple
Agra	• Taj Mahal - Fatehpur Sikri
Jaipur	• City Palace - Jal Mahal - Hawa Mahal - Amber Fort

Q65. Answer: (d) 7 : 3

Given

a3 + b3 : a3 - b3 = 185 : 158

Calculation

$(a^3 + b^3)/(a^3 - b^3) = 185/158$

$\Rightarrow 158(a^3 + b^3) = 185(a^3 - b^3)$

$\Rightarrow 158a^3 + 158b^3 = 185a^3 - 185b^3$

$\Rightarrow 158a^3 - 185a^3 = -185b^3 - 158b^3$

$\Rightarrow -27a^3 = - 343b^3$

$\Rightarrow a^3/b^3 = 343/27$

$\Rightarrow a/b = 7/3$

Therefore a : b = 7 : 3

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Q66. Answer: (a) Nagaland

The correct answer is Nagaland.

Important Points

• The famous Hornbill Festival is celebrated in Nagaland.

• It is also called the 'Festival of Festivals'.

• This festival was celebrated for the promotion of tourism and for the exhibition of the state's tradition and culture in which Naga tribe showcased their art.

• The festival was celebrated for 10 days straight.

Additional Information

• Famous North East Indian Festivals

• Hornbill Festival, Nagaland.

• Wangala Festival, Meghalaya.

• Torgya Festival, Arunachal Pradesh.

• Nongkrem Dance Festival, Meghalaya.

• Losoong Festival, Sikkim.

• Majuli Festival, Assam.

• Sangai Festival, Manipur.

• India International Cherry Blossom Festival, Meghalaya.

Q67. Answer: (a) 23

Given

(47)25 - 1

Concept

$(x^n - a^n)$ is divisible by (x -a) for all values of n.

Calculation

(47)^(25) - (1)^(25) is divisible by (47 - 1)

=> (47)25 - (1)^(25) is divisible by 46

=> 46 is a factor of 23.

so, (47)25 - 1 is exactly divisible by 23.

Q68. Answer: (b) The Konkan Railways

The correct answer is The Konkan Railways.

Important Points

• The Konkan Railways lines runs parallel to Arabian Sea.

• The Konkan Railway is a railway operated by the Konkan Railway Corporation, with its headquarters at CBD Belapur in Navi Mumbai, Maharashtra, India.

• The first passenger train ran on Konkan railway tracks on 20 March 1993, between Udupi and Mangalore.

Additional Information

• About Indian Railways

• Founded - 16 April 1853

• Headquarters - New Delhi

• Parent organization - Government of India

• Indian Railways - largest rail network in Asia.

• The first railway on the Indian sub-continent - from Bombay to Thane

• Formal inauguration -16th April 1853.

• The first electric train in India - DECCAN QUEEN (1929, from Kalyan to Pune)

Q69. Answer: (a) 3 : 4 : 5

Given

1/3 A = 1/4 B = 1/5 C

Concept

If a : b = m : n; b : c = o : p, then a : b : c = mo : no : np

Calculation

A over B = 3 over 4

A : B = 3 : 4

Bover C = 4over5

B : C = 4 : 5

so, A : B : C = 3 × 4 : 4 × 4 : 4 × 5

=> 12 : 16 : 20

=> 3 : 4 : 5

Therefore A : B : C is 3 : 4 : 5

Q70. Answer: (a) Defence Research and Development Organization

The correct answer is Defence Research and Development Organization.

Important Points

• Defence Research and development organization:

• DRDO is the R&D wing of the Ministry of Defence, Govt of India, with a vision to empower India with cutting-edge defence technologies.

• DRDO's pursuit of self-reliance and successful indigenous development and production of strategic systems and platforms such as Agni and Prithvi series of missiles; light combat aircraft, Tejas; multi-barrel rocket launcher, Pinaka; air defence system, Akash; a wide range of radars and electronic warfare systems; etc., have given quantum jump to India's military might, generating effective deterrence and providing crucial leverage.

• DRDO was formed in 1958 from the amalgamation of the then already functioning Technical Development Establishment (TDEs) of the Indian Army and the Directorate of Technical Development & Production (DTDP) with the Defence Science Organisation (DSO).

• The motto of the Defence Research and Development Organization is Balasya mülam vijnānam.

• It means Knowledge is power.

• Hence it is an Indian Organisation.

Q71. Answer: (d) -1

Given

The equations x2 + ax + b = 0 and x2 + bx + a = 0 have a common root

Calculation

let the common root is z, so put z in place of x in both the equation

z^2+ az + b = 0

=>z^2= -az - b ---- (1)

z^2 +bz + a = 0

=>z^2 = -bz - a. ---- (2)

from 1 and 2

-az - b = -bz - a

=>-az + bz = -a + b

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

=>z = 1

1 = -a(1) - b

=>1 = -a - b

=>1 = - (a + b)

=>-1 = a + b

a + b is - 1

Q72. Answer: (a) FQOKLYLR

The logic followed here is-

Similarly,

Hence, 'option 1' is the correct answer.

Q73. Answer: (a) 4/9

Given

3x/2y = 48/72

Calculation

(3x/2y) = 48/72

x/y = (48 × 2)/(72 × 3)

x/y = 4/9

Therefore x/y in its lowest term is 4/9.

Q74. Answer: (c) 2592

Given

X = 32 × 2, Y = 23 × 3 and Z = 32 × 22

Calculation

XY = $3^2 \times 2 \times 2^3 \times 3$

=> $3^3 \times 2$^4

YZ = $2^3 \times 3 \times 3^2 \times 2^2$

=> 2^5 × 3^3

ZX = $3^2 \times 2^2 \times 3^2 \times 2$

=> 3^4 × 2^3

L.C.M of XY, YZ and ZX = 2^5 × 3^4

=> 2592

Therefore The L.C.M of XY, YZ and ZX is 2592.

Q75. Answer: (d) Akbar

The correct answer is Akbar.

Key Points

• Agra fort is near the gardens of Taj Mahal stands the important 16th-century Mughal monument known as the Red Fort of Agra.

• The Red Fort of Agra was founded by Akbar.

• This powerful fortress of red sandstone encompasses within its 2.5-km-long enclosure walls, the imperial city of the Mughal rulers.

• The forbidding exteriors of this fort hide an inner paradise.

Additional Information

Akbar's monuments

Monuments	Location
Agra Fort	Agra
Fatehpur Sikri	Agra
Buland Darwaza	Agra
Humayun's Tomb	Delhi
Akbar's Tomb	Sikandra

Q76. Answer: (b) 93

The logic followed here is-

Hence, 'option 2' is the correct answer.

Q77. Answer: (b) 3 cm^2

Given

Length of each side of an equilateral triangle = 24√3 cm

Formula used

Area of equilateral triangle = (√ 3/4) × $(side)^2$

Calculation

Area of triangle = (√3/4) × $(24\sqrt{3})^2$

=> (√3/4) × 4 × ((3)^(1/4))²

=> (√ 3/4) × 4 × √3

=> √3 × √3

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=> 3 cm²

Therefore The area of the triangle is 3 cm²

Q78. Answer: (b) Croatia

The correct answer is Croatia.

Key Points

• The kuna was the currency of Croatia from 1994 until January 1, 2023, when it was replaced by the euro (€).

• Zagreb is the capital of Croatia.

Additional Information

Country	Capital	Currency
Afghanistan	Kabul	Afghani
Bangladesh	Dhaka	Taka
China	Beijing	Yuan
East Timor	Dili	US Dollar
Iran	Tehran	Riyal
Jordan	Amman	Jordan Dinar
Denmark	Copenhagen	Danish Krone
Finland	Helsinki	Euro
Germany	Berlin	Euro
Hungary	Budapest	Forint

Ireland	Dublin	Euro
Kenya	Nairobi	Kenya Shilling
Liberia	Monrovia	Liberian Dollar
Mauritania	Nouakchott	Ouguiya
Niger	Niamey	Franc
Uganda	Kampala	Shilling
Jamaica	Kingston	Jamaican Dollar
Peru	Lima	Nuevosol
Fiji	Suva	Fiji Dollar
Zimbabwe	Harare	US Dollar

Q79. Answer: (d) (√3 - 1)/2√2

Given

sin 15°

Formula used

sin(A - B) = sinA cosB - cosA sinB

sin45° = (1√2)

cos30° = √3/2

cos45° = 1/√2

sin30° = 1/2

Calculation

sin(45° - 30°) = sin45° cos30° - cos45° sin30°

=> (1/√2) × (√3/2) - (1/√2) × (1/2)

=> (√3/2√2) - (1/2√2)

=> (√3 - 1)/(2√ 2)

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Therefore The value of sin15° is (√3 -1)/2√ 2

Q80. Answer: (c) Raj

According to given information-

• Number of persons = 6

• Name of persons - Raj, Shruti, Priya, Mohan, Ajit and Geet

• Mohan is second from Priya's right and Priya is third from Raj's left.

• Ajit is second from Mohan's right and Geet is not Mohan's neighbour. Thus, final arrangement will be-

Clearly, Raj is sitting fourth to the right of Geet.

Hence, 'option 3' is the correct answer.

Q81. Answer: (d) 2.8 cm

Given

Perimeter of circle = 8.8 cm

Formula used

Circumference(perimeter) of circle = 2πr

where r is radius of circle

Calculation

2πr = 8.8

2 × (22/7) × r = 8.8

=> r = (8.8 × 7)/(2 × 22)

=> r = 1.4

Diameter = 2 × radius

=> 2 × 1.4

=> 2.8 cm

Therefore The diameter of the circle is 2.8 cm

Q82. Answer: (d) Yuvraj Singh

The correct answer is Yuvraj Singh.

• The Book - The Test of My Life - was written by Yuvraj Singh.

Additional InformationBooks Written By Famous Cricket Players

Person	Books
Sunil Gavaskar	Runs and Ruins. Sunny days. One day wonders. Idols
Sachin Tendulkar	Playing it my way.
Kapil Dev	Straight from the Heart. Cricket my style. By god's decree.
Donald Bradman	A Farewell to Cricket. The art of Cricket.
Shane Warne	No Spin: My Autobiography.
Ian Botham	Head-on
Yuvraj Singh	The Test of My Life from cricket to cancer and back
VVS Laxman	281 and Beyond
Sanjay Manjrekar	Imperfect.
Chris Gayle	Six Machine: I Don't Like Cricket... I Love It.
Brendon McCullum	Declared.

Q83. Answer: (d) 26

The logic followed here is-

Thus, 26 does not belong to the given pattern.

Hence. 'option 4' is the correct answer.

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Q84. Answer: (c) 22

Concept

firstly find the L.C.M of the numbers which are given i.e. 3,4, 6 and 8. then divide the number by the L.C.M of 3,4, 6 and 8. Difference between the remainder and L.C.M of the numbers(3, 4, 6 and 8) is the least number which should be added.

Calculation

L.C.M of 3, 4, 6 and 8 = 24

when 5474 is divided by 24, then remainder is 2. so, to make 5474 divisible we need to add 22 i.e. (24 - 2).

Hence, the least number that should be added to 5474 is 22, so, that the sum is exactly divisible by 3, 4, 6 and 8.

5474 + 22 = 5496

5496 is divisible by 3, 4, 6 and 8

Therefore 22 is the least number that should be added to 5474, so that the sum is exactly divisible by 3, 4, 6 and 8.

Q85. Answer: (b) 7

Given

3 : 5

Calculation

let x is added to 3 : 5 to make the ratio 5 : 6

(3 + x)/(5 + x) = 5/6

=> 6(3 + x) = 5(5 + x)

=> 18 + 6x = 25 + 5x

=> 6x - 5x = 25 - 18

=> x = 7

Therefore 7 has to be added to each term of 3 : 5 to make the ratio 5 : 6.

Q86. Answer: (a) Mar 2010

Total number of accounts = 73.45 + 104.76 + 138.50 + 182.06

=> 498.77

15% of 498.77

=> 74.81

Therefore In 2010, the number of accounts approximately 15% of the total number of accounts in all the years.

Q87. Answer: (a) 6%

Total number of accounts = 73.45 + 104.76 + 138.50 + 182.06

=> 498.77

Difference of number of accounts in 2010 and 2011 = 104.76 - 73.45

=> 31.31

Required percentage = (31.31/498.77) × 100

=> 6.27% or 6%

Therefore The approximate difference in the number of accounts for March 2010 and March 2011 as a 6% of the total number of accounts represented in the graph.

Q88. Answer: (a) 316

Number of accounts opened in first three years = 73.45 + 104.76 + 138.50

=>316.71

Therefore 316 accounts are opened in first three years.

Q89. Answer: (d) 31%

Number of accounts opened in 2013 = 182.06

Number of accounts opened in 2012 = 138.50

Growth rate in the number of accounts in 2013 = [(182.06 - 138.50)/138.50] × 100

=>(43.56/138.50) × 100

=>31.45%

Therefore 31% is the growth rate in the number of accounts in 2013 as that of previous year.

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Q90. Answer: (c) 125

The logic followed here is:-

Hence, 'option 3' is the correct answer.

Q91. Answer: (a) if

The logic followed here is:-

Hence, 'option 1' is the correct answer.

Q92. Answer: (d) 3315

The logic followed here is-

1. 4913 → 17^3= 4913
2. 1000 → 10^3 = 1000
3. 1728 → 12^3= 1728
4. 3315 → Not a cube of any whole number

Hence, 'option 4' is the correct answer.

Q93. Answer: (a) 4

Given

Number of toffees Ram has = 15

Number of biscuit Ram has = 10

Number of chocolates Ram has = 5

Calculation

Number of toffees given to Sohan = (1/3) × 15

=> 5

Number of biscuit given to Mohan = (1/2) × 10

=> 5

Number of biscuit left with Ram = 10 - 5

=> 5

Sohan gives all toffees to Mohan and get two biscuit.

Now, Number of biscuit Sohan has = 2

Number of toffess Sohan has = 0

Number of biscuit Mohan has = 5 - 2

=> 3

Number of biscuit given by Mohan to Ram = 3

Now, Ram has number of biscuit = 5 + 3

=> 8

Ram give half of the biscuit to Sohan = (1/2) × 8

=> 4

Biscuit left with Ram = 8 - 4

=> 4

Therefore 4 biscuit will be left with Ram, if he gives half of the biscuits, in the end, to Sohan.

Q94. Answer: (d) 5

Given

Number of person = 21

Number of persons speak German = 10

Number of persons speak Japanese = 12

Number of persons speak French = 10

Calculation

Let number of person speak French, German and Japanese represents by F, G and J.

French persons = a + b + c + g = 10

Japanese persons = b + d + g + e = 12

German = c + g + e + f = 10

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Persons speak all languages, g = 3

persons speak only French, a = 4

Persons speak only Japanese, d = 5

Person speak French and German, (c + g) = 4

c + 3 = 4

=> c = 4 - 3

=> c = 1

a + b + c + g =,10

=> 4 + b + 1 + 3 = 10

=> b = 10 - 8

=> b = 2

b + d + g + e = 12

=> 2 + 5 + 3 + e =12

=> e = 12 - 10

=> e = 2

persons speak Japanese and German, (g + e) = 3 + 2

=> 5

Therefore 5 persons speak Japanese and German.

Q95. Answer: (c) Both are strong

• The question is about the decision of banning vegetarian food in India.

1. Argument 1 states the merits of vegetarian food. It explains how these foods are an affordable source of nutrition for a large number of people.

• Thus, argument 1 is strong.

2. Argument 2 is against the idea of banning vegetarian food. The reason it states is that people should not be deprived of the freedom to choose what they wish to eat. Freedom of choice will be affected by this decision.

• Thus, argument 2 is also strong.

Hence, "both are strong" is the correct answer.

Q96. Answer: (d) 70

Given expression: 15 + 3 - 8 ÷ 9 × 7

From the given information,

• means → ÷

÷ means → ×

• means → +

× means → -

Replacing the signs in the given expression-

15 ÷ 3 + 8 × 9 - 7

Now, solving by using the BODMAS rule.

15 ÷ 3 + 8 × 9 - 7

= 5 + 8 × 9 - 7

= 5 + 72 - 7

= 77 - 7

= 70

Hence, 'option 4' is the correct answer.

Q97. Answer: (d) Monitor

The logic followed here is-

1. Hard disk- It is a storage device

2. CD- It is a storage device.

3. Flash Drive- It is a storage device.

4. Monitor- It is an output device but not a storage device.

Hence, 'option 4' is the correct answer.

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• Definition of storage device - A hardware device that can be used to store digital data and applications which may be in the form of images, video, audio, etc. is called a storage device.

Q98. Answer: (c) 1

Given

A = 2B

B = (1/2) of D

D = 3C

Calculation

let C is x

D = 3x

B = (1/2) of 3x

=> 3x/2

A = 2 × (3x/2)

=> 3x

A is 3x and D is also 3x.

so, A is 1 times of D.

Therefore A is 1 times of D.

Q99. Answer: (b) 72

The logic followed here is-

Hence, 'option 2' is the correct answer.

Q100. Answer: (a) 10

Given

Total number of students = 20

Number of students study English language = 15

Number of students study Hindi language = 10

Concept

Venn diagram

Calculation

Both languages study by students, b = 5

Number of students studying only English = c

b + c = 15

=> 5 + c = 15

=> c = 15 - 5

=> c = 10

Therefore 10 students are studying only English,

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