RRB NTPC CBT-I Official Paper (Held On: 22 Feb 2021 Shift 2) (Previous Year Paper)

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

Take this paper as a timed mock test

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

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

Q1. In which year was The Right of Children to Free and Compulsory Education Act introduced in India?

(a) 2011
(b) 2002
(c) 2009
(d) 2005

Q2. If Raju's earning is 40% less than Venkat's earning, by how much percentage is Venkat's earning more than Raju's earning?

(a) 200%
(b) 100%
(c) (400/3) %
(d) (200/3) % %

Q3. What is the correct full form of “VIRUS” in computer programming?

(a) Vital Information Resources Under Seize
(b) Vital Information Record User Seize
(c) Vital Information Recognize Search
(d) Vital Inter Change Result Until Source

Q4. If in a certain code language, ALCHEMIST is written as YJAFCKGQR, how will ALPHONSE be written as in that language?

(a) YJNFMLQC
(b) YJNGMLQC
(c) XJNFMLQC
(d) YJNFMNQC

Q5. The digit in the unit's place of the product 61×62×63 ....×69 is:

(a) 4
(b) 0
(c) 2
(d) 3

Q6. India's constitutional provision of ‘Indirect election of Rajya Sabha members’ was adopted from which country?

(a) USA
(b) South Africa
(c) England
(d) Germany

Q7. With which of the following sports is the English professional club, Chelsea associated?

(a) Cricket
(b) Football
(c) Hockey

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(d) Rugby

Q8. Which of the following statements is FALSE?

(a) In any triangle, the sum of any two sides of the triangle is greater than the length of the third side.
(b) In any triangle, the difference between the lengths of any two sides of a triangle is smaller than the length of the third side.
(c) In any triangle, the sum of any two angles of the triangle is greater than the measure of the third angle.
(d) The greatest side of any triangle makes acute angles with each of the other sides.

Q9. Who amongst the following became the Acting Prime Minister of India twice?

(a) Gulzarilal Nanda
(b) Morarji Desai
(c) Indira Gandhi
(d) Charan Singh

Q10. Which one of the following country assisted India to launch its first artificial Satellite in year 1975?

(a) USA
(b) UK
(c) Soviet Union
(d) France

Q11. Which of the following statements is true with respect to a triangle?

(a) Any two sides together are less than twice the median of remaining side.
(b) The concurrent point of internal angle bisectors is called orthocenter.
(c) The sum of medians is less than perimeter.
(d) The concurrent point of altitudes is called centroid.

Q12. Which of the following options has the correct types of Planetary winds?

(a) Trade Winds and Periodic Winds
(b) Local Winds and Periodic Winds
(c) Trade Winds, Westerlies and Polar Easterlies
(d) Polar Winds and Westerlies

Q13. Read the given statements and conclusions carefully. Assuming that the information given in the statements is true, even if it appears to be at variance with commonly known facts, decide which of the given conclusions logically follow(s) from the statements.

Statements:

Some needles are swords.

All swords are fast.

Conclusions:

I. All needles are fast.

Ii. All swords are needles.

(a) Both the conclusions follow.
(b) Only conclusion II follows.
(c) Neither conclusion I nor II follows.
(d) Only conclusion I follows.

Q14. At what simple interest rate per annum will a sum of money become four times of itself in 20 years?

(a) 20%
(b) 15%
(c) 5%
(d) 10%

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Q15. Select the option in which the words share the same relationship as that shared by the given pair of words.

Car : Travel

(a) Apple : Juicer
(b) Food : Fire
(c) Fat : Thin
(d) Book : Read

Q16. The 'National War Memorial' inaugurated by Prime Minister Narendra Modi is in:

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

Q17. The Vedic time period in India lasted from:

(a) 336 to 323 BC
(b) 3000 to 2600 BC
(c) 550 to 323 BC
(d) 1500 to 500 BC

Q18. Which of the following pairs is NOT correctly matched (instrument to the artist)?

(a) Pakhawaj - Shiv Kumar Sharma
(b) Sarod - Amjad Ali Khan
(c) Tabla - Kishan Maharaj
(d) Sitar - Pt. Ravi Shankar

Q19. India's largest salt water lake is situated in:

(a) Thar Desert Region
(b) Ganga Delta
(c) Krishna Delta
(d) Mahanadi Delta

Q20. If the difference between exterior and the interior angles of a regular polygon is 60^{o}, with an interior angle being greater than the corresponding exterior angle, then find the number of sides of the polygon.

(a) 6
(b) 7
(c) 8
(d) 5

Q21. If $x = (\sqrt{5} + 1)/(\sqrt{5} - 1)$ and $y = 1/x$, then what will be the value of $x^2 + y^2$?

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

Q22. As of October 2020, how many IIMs (Indian Institutes of Management) are there?

(a) 12
(b) 24
(c) 16
(d) 20

Q23. A flame is made up of three parts: the innermost part, the middle part and the outermost part. Why is the innermost part black?

(a) Because of complete combustion of fuel
(b) Because of the incomplete combustion of fuel
(c) Because of the presence of un-burnt carbon particles

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(d) Because of the presence of oxygen

Q24. If x^{11}= y^0 and x = 2y, then y is equal to:

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

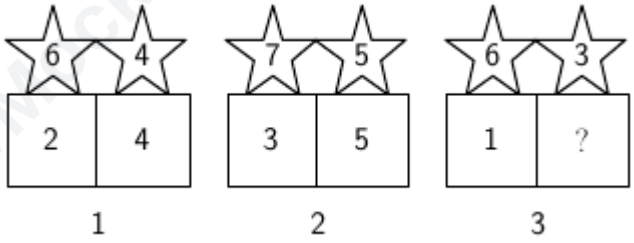
Q25. What is the function of insulin in the human body?

(a) It supplies oxygen to the lungs.
(b) It regulates the flow of blood.
(c) It regulates how the body uses and stores glucose and fat.
(d) It supplies filtered blood to the heart.

Q26. The study of the universe is known as:

(a) Cosmology
(b) Etymology
(c) Anatomy
(d) Anthropology

Q27. Study the given pattern carefully and select the number that can replace the question mark (?) in it.



(a) 6
(b) 4
(c) 2
(d) 8

Q28. The sum of the even numbers between 1 and 111 is:

(a) 3080
(b) 3076
(c) 3082
(d) 3078

Q29. A and B are two alloys formed by the combination of gold and copper in the ratio 5 : 3 and 5 : 11 respectively. Equal quantities of these two alloys are melted and mixed to form a new alloy C. Now, alloy C contains gold and copper in the ratio:

(a) 25 : 23
(b) 15 : 17
(c) 33 : 25
(d) 17 : 15

Q30. Vinod travelled from his home to his office at a speed of 20 km/h and walked back at a speed of 5 km/h. The whole journey took 4 h. The distance between his office and his home is:

(a) 10 km
(b) 6 km
(c) 8 km
(d) 16 km

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Q31. Solve the following.

3.3636... - 2.0505... + 1.3333... = ?

(a) 2.6060...
(b) 2.6161...
(c) 2.6464...
(d) 2.6363...

Q32. 16 men can finish a piece of work in 8 days while 20 women and 4 men can do it in 16 days. In how many days can 10 women complete the entire work by themselves?

(a) 48 days
(b) 64 days
(c) 40 days
(d) 60 days

Q33. Which of the following companies owns KUKA Robotics (Industrial Robots)?

(a) Midea Group, China
(b) Paslin Group, USA
(c) Kion Group, China
(d) Hocoma Group, Switzerland

Q34. Two letters are selected from the word 'TENDULKAR '. The probability that both are vowels is:

(a) (2)/(9)
(b) (5)/({12)}
(c) (5)/(9)
(d) (1)/({12)}

Q35. Google Drive, Sky Drive and Dropbox are perfect examples of:

(a) internet computing
(b) virtual reality
(c) cloud storage services
(d) virtual drives

Q36. Which of the following is NOT a non-renewable resource?

(a) Natural Gas
(b) Solar Energy
(c) Liquefied Petroleum Gas
(d) Coal

Q37. An international treaty, designed to protect human health and phase out the use of mercury, was signed in 2013 at _____.

(a) Minamata, Japan
(b) The Hague, Netherlands
(c) Tianjin, China
(d) Betio, Kiribati

Q38. Which of the following statements is true?

(a) LCM of fractions = HCF of numerators/LCM of denominators
(b) HCF of fractions = LCM of numerators/HCF of denominators
(c) The numbers are said to be co-prime if their LCM is 1
(d) HCF of fractions = HCF of numerators/LCM of denominators

Q39. Who among the following sportsmen has the nickname ‘CR7’?

(a) Chris Paul
(b) Chris Rea
(c) Chris Gayle

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(d) Cristiano Ronaldo

Q40. Which galaxy is the nearest to the Milky Way?

(a) Triangulum Galaxy
(b) Andromeda Galaxy
(c) Whirlpool Galaxy
(d) Virgo Stellar Stream

Q41. What is the agenda behind the Government of India's flagship programme ‘Pradhan Mantri Vaya Vandana Yojana’?

(a) To provide affordable housing to all.
(b) To provide a minimum monthly pension of Rs. 1000 or Rs. 2000
(c) Assured pension on a guaranteed return of 8% after making a minimum initial investment for Senior Citizen
(d) To provide a life cover of Rs. 200,000 against a premium of Rs. 330 per annum.

Q42. Select the option in which the words do NOT share the same relationship as that shared by the rest.

(a) Parrot : Bird
(b) Car : Vehicle
(c) Fruit : Tree
(d) Carrot : Vegetable

Q43. Shri Guru Gobind Singh Ji founded the ‘Khalsa Panth’ in the year _____.

(a) 1699
(b) 1701
(c) 1697
(d) 1705

Q44. The world's largest drainage basin is:

(a) Nile Basin
(b) Mississippi Basin
(c) Amazon Basin
(d) Ganga Basin

Q45. _____ is a famous Kathak dancer.

(a) Josyula Seetharamaiah
(b) Padma Subrahmanyam
(c) Birju Maharaj
(d) Geeta Chandran

Q46. If $a = 0.1 + \sqrt{0.9}$ and $b = 0.1 - \sqrt{0.9}$ then what will be the value of $a^2 + b^2$?

(a) 2.82
(b) 1.9
(c) 1.82
(d) 2

Q47. Which nation hosted the 14^(th) Conference of Parties (COP) of the United Nations Convention to Combat Desertification (UNCCD)?

(a) India
(b) South Africa
(c) China
(d) UAE

Q48. A question is given followed by two arguments. Decide which of the arguments is/are strong with respect to the question.

Question:

Does assigning class monitors harbour the feeling of jealousy among students?

Arguments:

(i) Yes, all class monitors start to behave arrogantly.

(ii) No, it teaches them equity by providing every student a chance to learn team spirit under a leader.

(a) None of the arguments are strong.
(b) Only argument (ii) is strong.
(c) Only argument (i) is strong.
(d) Both the arguments are strong.

Q49. Find the value of (?)

6^(1.2) × 36^? × 30^(2.4) × 25^(1.3) = 30^5

(a) 2.6
(b) 0.7
(c) 1.4
(d) 0.1

Q50. The sum of two numbers is 98 and their HCF is 14. How many such pairs can be formed?

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

Q51. A statement is given followed by two arguments. Decide which of the arguments is/are strong with respect to the statement.

Statement:

Computer literacy is desirable.

Arguments:

(i) Yes, as most of the work is done efficiently.

(ii) No, computers are a nuisance.

(a) None of the arguments are strong.
(b) Only argument (ii) is strong.
(c) Only argument (i) is strong.
(d) Both the arguments are strong.

Q52. If 60% of (a - b) is the same as 40% of (a + b), then what percentage of a is b?

(a) 20
(b) 24
(c) 26
(d) 22

Q53. The distance between two stations A and B is 420 km. A train starts from A at 3 p.m. and travels towards B at a speed of 60 km/h. Another train starts from B at 4 p.m. and travels towards A at a speed of 30 km/h. At what time do they meet?

(a) 10:30 p.m.
(b) 8 p.m.
(c) 10 p.m.
(d) 9 p.m.

Q54. What is the meaning of ‘Lokayukta’ in the Constitution of India?

(a) A body operating at the state level to investigate an individual's complaint against public servants or any politician with respect to corruption
(b) A body operating at the central level to investigate the civil servant or politician with respect to complaint made against them for corruption
(c) It is also called ‘Ombudsman ’.
(d) A body created to look into the complaints made with respect to frauds in the financial sector

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Q55. The value of 30 - (3 × 4 + 15 ÷ 3) + 8 × 3 ÷ 6 is:

(a) 21
(b) 19
(c) 15
(d) 17

Q56. Which country unveiled the world's first floating nuclear power station?

(a) USA
(b) China
(c) India
(d) Russia

Q57. Who led India's first expedition to the Antarctic in 1982?

(a) Dr. Paramjit Singh
(b) Dr. APJ Abdul Kalam
(c) Dr. Zahoor Qasim
(d) Dr. SZ Qasim

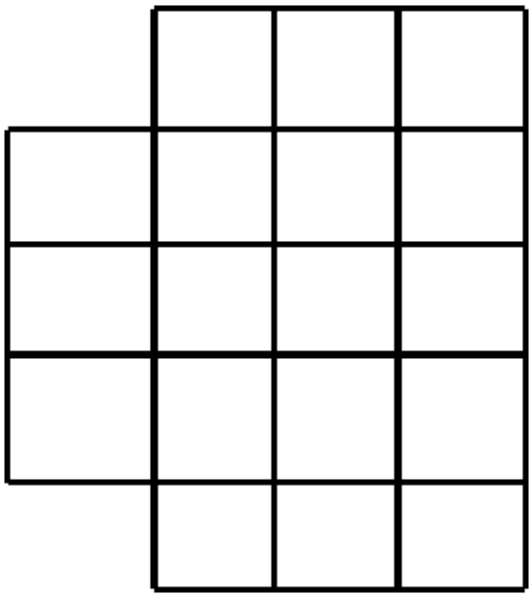
Q58. Which of the following freedom fighters was a co-founder of Swaraj Party along with Motilal Nehru?

(a) Ambica Charan Mazumdar
(b) Chittaranjan Das
(c) Bhupendra Nath Bose
(d) Rash Behari Ghosh

Q59. A sum of money lent out at a simple interest amounts to Rs. 600 after two years and to Rs. 900 after a further period of 5 years. The interest rate is:

(a) 12.5%
(b) 13%
(c) 10%
(d) 12%

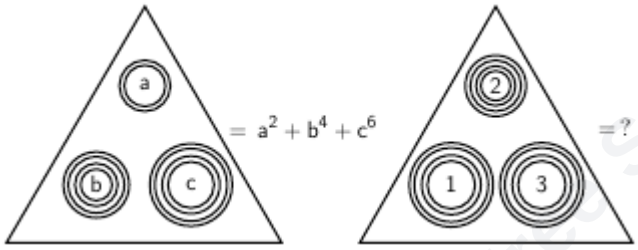
Q60. How many squares are there in the given figure?



(a) 46
(b) 32
(c) 48
(d) 44

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Q61. $a^2 + b^4 + c^6$ is logically related to the first diagram as shown below. Following the same logic, find the value that will replace the (?) in the second diagram?



(a) 746
(b) 420
(c) 540
(d) 500

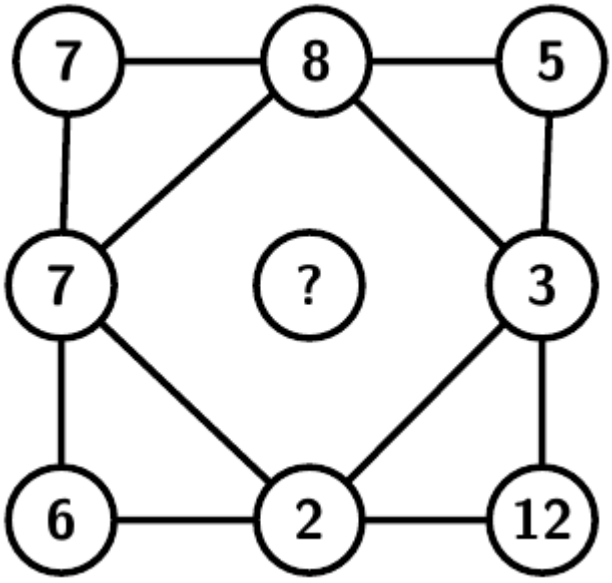
Q62. A box contains 6 white balls and 7 black balls. Two balls are drawn at random. What is the probability that both of them are of different colours?

(a) 2 / 13
(b) 6 / 13
(c) 7 / 13
(d) 4 / 13

Q63. Which term was used to denote poll tax on non-muslim subjects during the reign of the Mughal Empire?

(a) Sharia
(b) Shafi'i
(c) Jizyah
(d) Jahiliyah

Q64. Study the given pattern carefully and select the number from among the given options that can replace the question mark (?) in it.



(a) 12
(b) 8
(c) 10
(d) 5

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Q65. If the perimeter of a right angled triangle is 56 cm and the area of the triangle is 84 cm², then the length of the hypotenuse is:

(a) 24 cm
(b) 50 cm
(c) 25 cm
(d) 7 cm

Q66. Who among the following composed the National Song of India?

(a) Bankim Chandra Chattopadhyay
(b) Sri Aurobindo
(c) Rabindranath Tagore
(d) Sarojini Naidu

Q67. If $x^2 - 3x + 1 = 0$, then the value of $x^2 + x + 1/x + 1/(x^2)$ is:

(a) 10
(b) 6
(c) 8
(d) 2

Q68. Name the scheme that was launched on 8 April 2015, under which a loan of up to Rs. 50,000 is given under sub-scheme 'Shishu'; between Rs. 50,000 to Rs. 5.0 lakh under sub-scheme 'Kishore'; and between Rs. 5.0 lakh to Rs. 10.0 lakh under sub-scheme 'Tarun'.

(a) Atal Pension Yojana (APY)
(b) Pradhan Mantri Suraksha Bima Yojana (PMSBY)
(c) Pradhan Mantri Mudra Yojana (PMMY)
(d) Pradhan Mantri Jeevan Jyoti Bima Yojana (PMJJBY)

Q69. If 60% of x added to 60, then the result is x + 20. The value of number x is:

(a) 100
(b) 70
(c) 80
(d) 90

Q70. How will you write 3.33 hours in hours, minutes and seconds?

(a) 3 hours, 33 minutes
(b) 3 hours, 30 minutes, 3 seconds
(c) 3 hours, 30 minutes, 30 seconds
(d) 3 hours, 19 minutes, 48 seconds

Q71. If $\cos A + \sec A = (5)/(2)$ and A is an acute angle, then $\sin A + \operatorname{cosec} A$ is equal to:

(a) $(7)/(\sqrt{3})$
(b) $(7)/(2\sqrt{3})$
(c) $(5)/(2\sqrt{3})$
(d) $2\sqrt{(3)}/(5)$

Q72. Where is the Nuclear Fuel Complex of India situated?

(a) Hubli
(b) Visakhapatnam
(c) Chennai
(d) Hyderabad

Q73. What is the full form of LASER?

(a) Lower Application of System Emission of Radioactivity
(b) Learning to Amplify and Stimulate Emission of Radiation
(c) Light Addition to Systematic Electromagnetic Radiation

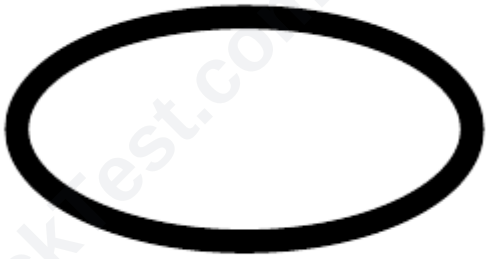
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(d) Light Amplification by Stimulated Emission of Radiation

Q74. A family includes six members A, B, C, X, Y and Z. There are two married couples. B is an engineer and the father of Y. Z is the grandfather of C and is a scientist. X is the grandmother of Y and is a painter. Y and C are sisters and are cricketers. A is the mother of C and an actor. There is one engineer, one scientist, one actor, one painter and two cricketers in the group. Which of the following options is a group of male members only?

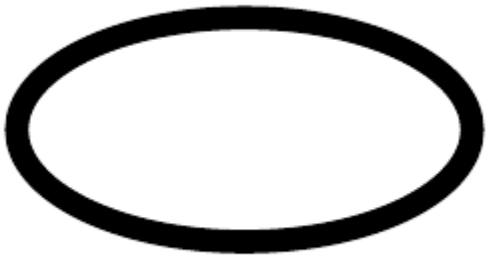
(a) BZA
(b) ZY
(c) BZY
(d) BZ

Q75. The



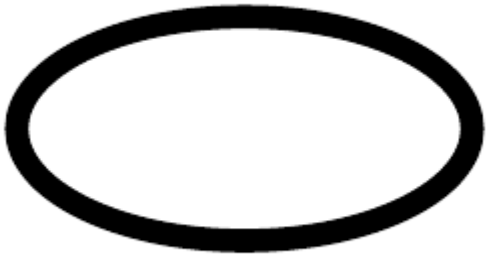
represents a set of calculations that are common across all the given equations. Identify the calculations involved and solve the third equation on the same basis:

4



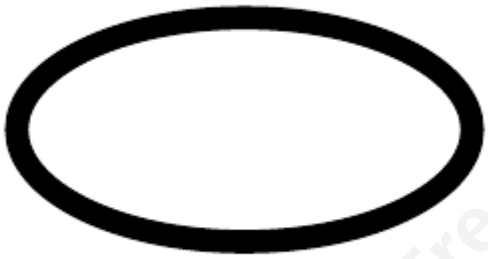
3 = 16; 9; 25

6



2 = 36; 4; 40

7



4 = ?; ?; ?

(a) 72, 5, 12
(b) 10, 6, 4
(c) 49, 16, 65
(d) 54, 11, 18

Q76. In which year was the European Union established?

(a) 1994
(b) 1989
(c) 1993
(d) 1992

Q77. If a : b = 2 : 3, then find the value of (3a + 7b) : (6a - 3b).

(a) 9 : 1
(b) 6 : 1
(c) 2 : 1
(d) 3 : 1

Q78. The Postal Index Number (PIN) is a six digit code used by Indian postal department, what does the first two digit of the code (taken together) stands for:

(a) Delivery post office
(b) District
(c) Sub region or one of the postal circles
(d) Municipal corporation

Q79. If the side of an equilateral triangle is $2\sqrt{2}$ cm, then the length of the perpendicular drawn from vertex to the side is:

(a) $\sqrt{7}$ cm
(b) $\sqrt{6}$ cm
(c) 2 cm
(d) $\sqrt{5}$ cm

Q80. In which of the following cities was the 33 ft tall bronze statue of Swami Vivekananda inaugurated on National Youth Day in 2019?

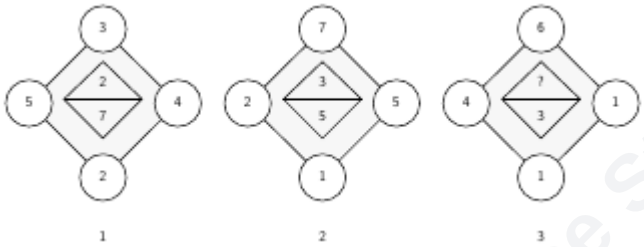
(a) Gwalior, Madhya Pradesh
(b) Ranchi, Jharkhand
(c) Warangal, Telangana
(d) Vadodara, Gujrat

Q81. Which of the following carries blood from the heart to the kidneys?

(a) Vena cava
(b) Renal vein
(c) Renal artery
(d) Coronary artery

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Q82. Study the given pattern carefully and select the number that can replace the question mark (?) in it.



(a) 6
(b) 7
(c) 4
(d) 2

Q83. If a × b = a + b + (√(a/b)) + √(ab), then what will be the value of 16 × 4?

(a) 26
(b) 28
(c) 30
(d) 32

Q84. 'Nuclear Fusion' is the process of combining of two or more light nuclei. What is the required temperature (approximately) for nuclear fusion?

(a) 100 million K
(b) 810 million K
(c) 812 million K
(d) 10 million K

Q85. Select the option that is different from the rest.

(a) American football
(b) Cricket ball
(c) Golf ball
(d) Tennis ball

Q86. In the following table, production of mangoes (in tons) of three different states A, B, C over the years 2016 to 2019 is shown.

Years / States	2016	2017	2018	2019
A	3	4.2	5.3	4.8
B	5	5.4	4	5.6
C	4.1	4.3	5	5.6

What is the approximate percentage increase in the production of state A in the year 2019 in comparison with that in 2017?

(a) 14%
(b) 10%
(c) 17%
(d) 20%

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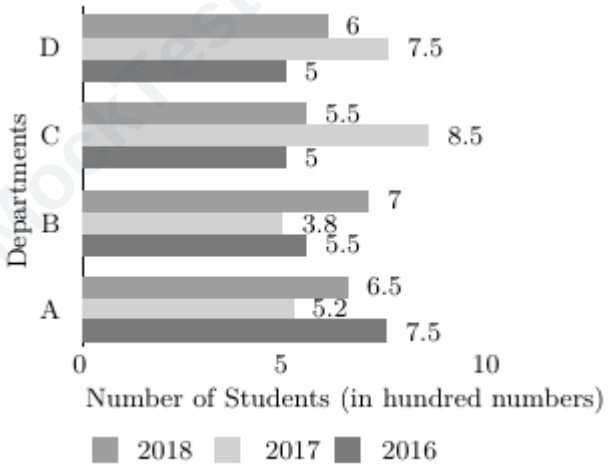
Q87. The given table shows the number of candidates who appeared and qualified in an entrance examination from different states over the years.

Year / States	2016		2017		2018	
	Appeared	Qualified	Appeared	Qualified	Appeared	Qualified
A	1200	800	1500	700	1800	1000
B	1500	600	1600	800	2000	1100
C	2000	680	2200	900	1800	1100
D	1600	700	1500	950	1800	1200
E	1500	490	1100	400	1300	800

Combining the states D and E together in 2016, what is the approximate percentage of the number of candidates qualified out of the number of the candidates appeared?

(a) 25%
(b) 38%
(c) 45%
(d) 32%

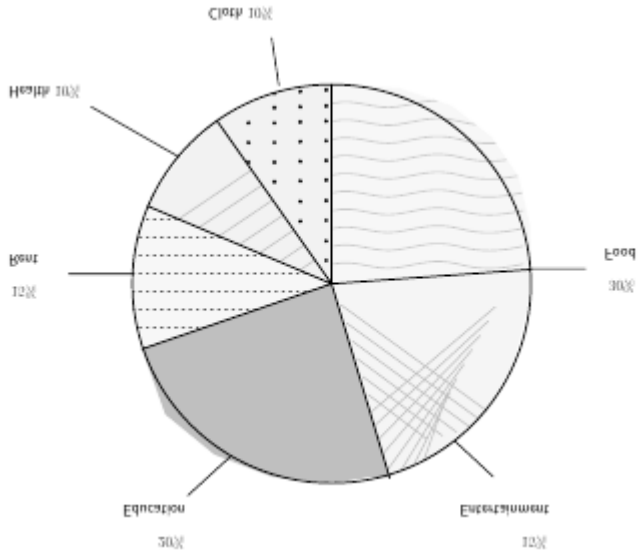
Q88. The given bar graph shows the number of students (in hundreds) graduated from 4 different departments of a university A, B, C and D during 3 consecutive years.



What is the average number of students graduated from all the departments (in hundreds) for the year 2017?

(a) 100
(b) 625
(c) 420
(d) 500

Q89. The following pie chart shows the monthly expenditure incurred by a family over different items.



What is the approximate percentage incurred on expenditure on education with respect to the expenditure on rent?

(a) 120%
(b) 133%
(c) 50%
(d) 100%

Q90. Pick the odd one out.
(a) Midwife
(b) Nurse
(c) Patient
(d) Doctor

Q91. If in a certain code language, ALCOHOL is written as 66, how will JUICE be written as in that language?
(a) 37
(b) 48
(c) 44
(d) 52

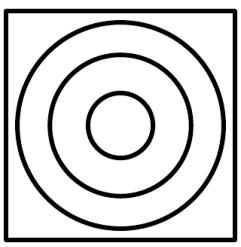
Q92. Select the number that can replace the question mark (?) in the following series.
12, 17, 14, 19, 16, 21, 18, ?
(a) 22
(b) 23
(c) 20
(d) 18

Q93. The difference between the squares of two numbers is 39 and the sum of these two numbers is 13. What are those numbers?
(a) 10, 3
(b) 8, 5
(c) 7, 6
(d) 4, 3

Q94. Select the option in which the words share the same relationship as that shared by the given pair of words.
Falcon : Bird
(a) Fat : Nutrient
(b) Hot : Fire
(c) Lion : Rat
(d) Fruit : Tree

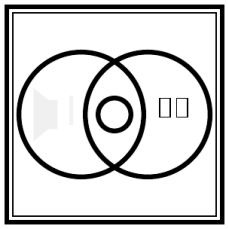
Q95. In a certain code language, L is written as 15 and T is written as 7. How will LATER be written as in that language?
(a) 15137229
(b) 15267229
(c) 15237229
(d) 15247229

Q96. Select the Venn diagram that best represents the relationship between:
Moon, Satellite, Celestial body
(a)

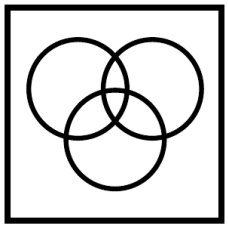


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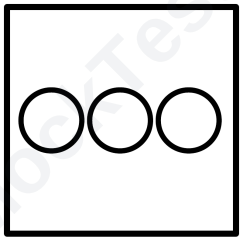
(b)



(c)



(d)



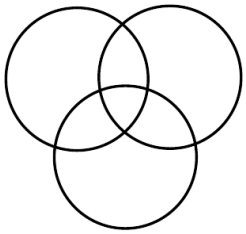
Q97. Hawkins is Raman's sister's husband. Raman is Curie's brother. Einstein is Curie's father and Martha's husband. Martha has two children and two nephews. How is Martha related to Hawkin's wife?

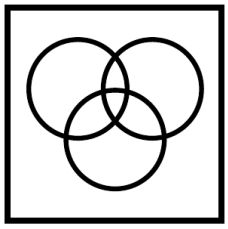
(a) Mother
(b) Maternal Aunt
(c) Mother-in-law
(d) Sister

Q98. Select the Venn diagram that best represents the relationship between:

Dentist, Woman, Good dentist

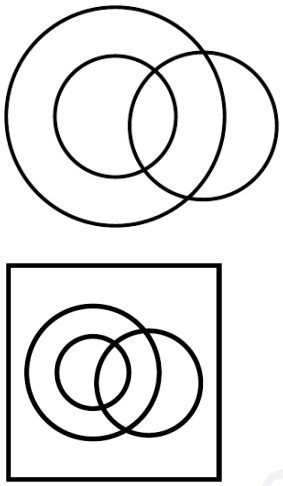
(a)



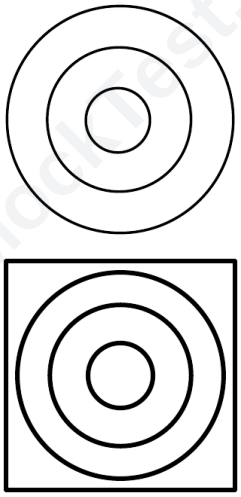


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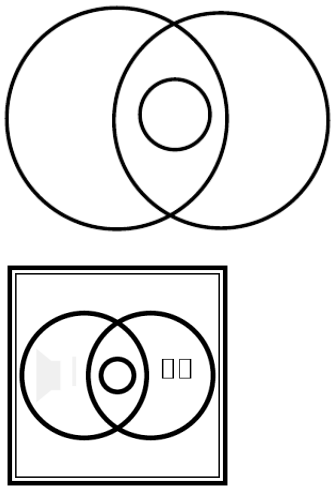
(b)



(c)



(d)



Q99. Identify the term that does NOT belong to the following series.

3T3, 5S5, 9R7, 12P8, 23P11

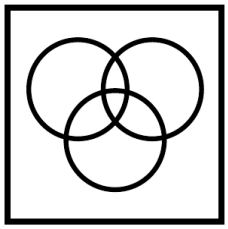
(a) 9R7
(b) 23P11
(c) 12P8
(d) 3T3

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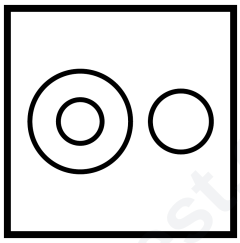
Q100. Select the Venn diagram that best represents the relationship between:

Yellow, Sun, Color

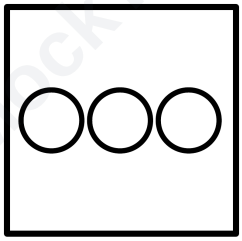
(a)



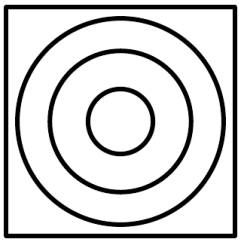
(b)



(c)



(d)



ANSWER KEY

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

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SOLUTIONS

Q1. Answer: (c) 2009

The correct answer is 2009

Key Points

• The Right of Children to Free and Compulsory Education Act, also known as the RTE Act, was introduced in the year 2009.

• This Act ensures that every child in India has the right to full-time elementary education of satisfactory and equitable quality in a formal school which satisfies certain essential norms and standards.

• The Act makes education a fundamental right for children between the ages of 6 and 14 years and specifies minimum norms in elementary schools.

• It requires all private schools to reserve 25% of seats to children from disadvantaged groups and physically challenged children.

Additional Information

• The RTE Act was passed by the Indian Parliament on 4th August 2009, and came into effect on 1st April 2010.

• The Act is in consonance with Article 21A of the Indian Constitution, which was added by the 86th Amendment in 2002, mandating free and compulsory education for children in the 6-14 age group.

• The Act also mandates improvement in the quality of education through proper infrastructure, trained teachers, and comprehensive evaluation systems.

• It emphasizes the need for inclusive education, ensuring that children from various socio-economic backgrounds receive equal educational opportunities.

Q2. Answer: (d) (200/3) % %

Given:

Raju's earning is 40% less than Venkat's earning.

Formula Used:

Percentage Increase = Difference/(Original Value) × 100

Calculation:

Let Venkat's earning be V.

Raju's earning = V - 0.4V = 0.6V

Difference in earnings = V - 0.6V = 0.4V

Percentage increase in Venkat's earning over Raju's earning:

Percentage Increase = 0.4V/0.6V × 100

=> Percentage Increase = 0.4/0.6 × 100

=> Percentage Increase = 4/6 × 100

=> Percentage Increase = 2/3 × 100

=> 200 / 3 %

Venkat's earning is 200 / 3 % more than Raju's earning.

Q3. Answer: (a) Vital Information Resources Under Seize

The correct answer is Vital Information Resources Under Seize

Key Points

• The correct full form of "VIRUS" in computer programming is Vital Information Resources Under Seize.

• This term is often used to describe malicious software that can disrupt, damage, or gain unauthorized access to computer systems.

• Understanding the full form helps in grasping the nature and potential impact of a virus on information resources.

• VIRUS is a term that underscores the importance of cybersecurity measures to protect vital information resources from being compromised.

Additional Information

• Computer viruses are types of malicious software programs that, when executed, replicate by inserting copies of themselves into other computer programs, data files, or the boot sector of the hard drive.

• They can spread through email attachments, internet downloads, and other means of digital communication.

• Preventive measures include the use of antivirus software, regular software updates, and avoiding suspicious links and attachments.

• Awareness and education about computer viruses are crucial in maintaining the integrity and security of digital information.

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Q4. Answer: (a) YJNFMLQC

The logic followed here is:

ALCHEMIST is written as YJAFCKGQR

Similarly,

ALPHONSE will be written as

Hence, "Option 1" is the correct answer.

Q5. Answer: (b) 0

Given:

We need to find the digit in the unit's place of the product 61×62×63×...×69.

Formula Used:

To determine the unit's digit of a product, we only need to consider the unit's digits of the factors involved.

Calculation:

Let's consider the unit digits of the numbers from 61 to 69:

61 (unit digit 1), 62 (unit digit 2), 63 (unit digit 3), 64 (unit digit 4), 65 (unit digit 5), 66 (unit digit 6), 67 (unit digit 7), 68 (unit digit 8), 69 (unit digit 9)

Now, we multiply these unit digits together and find the unit digit of the resulting product:

1 × 2 × 3 × 4 × 5 × 6 × 7 × 8 × 9

Note: The presence of 5 and an even number (in this case, 2, 4, 6, or 8) in the factors ensures that the product will end in 0 because 5 × any even number will always give a product ending in 0.

Thus, the unit digit of the product is:

0

The digit in the unit's place of the product 61×62×63×...×69 is 0.

Q6. Answer: (b) South Africa

The correct answer is South Africa

Key Points

• India's constitutional provision of 'Indirect election of Rajya Sabha members' was adopted from South Africa.

• The Rajya Sabha, also known as the Council of States, is the upper house of India's bicameral Parliament.

• Members of the Rajya Sabha are elected by the elected members of State Legislative Assemblies, and by the members of the Electoral college for Union Territories, through an indirect election process.

• This method ensures representation of the states in the federal structure of India.

• The system of indirect election helps in maintaining a balance of power between the central and state governments.

Additional Information

• The Rajya Sabha was constituted for the first time on 3rd April 1952.

• The maximum strength of the Rajya Sabha is 250 members, out of which 238 are representatives of the States and Union territories, and 12 are nominated by the President of India.

• The nominated members are chosen for their expertise in specific fields such as literature, science, art, and social service.

• Members of the Rajya Sabha serve staggered six-year terms, with one-third of the members retiring every two years.

• The Vice President of India is the ex-officio Chairman of the Rajya Sabha.

Q7. Answer: (b) Football

The correct answer is Football

Key Points

• Chelsea is a professional football club based in London, England.

• The club was founded in 1905 and has since become one of the most successful teams in English football.

• Chelsea competes in the Premier League, which is the top tier of English football.

• The club has won numerous domestic and international titles, including the UEFA Champions League and the Premier League.

• Chelsea's home ground is Stamford Bridge, which is located in Fulham, London.

Additional Information

• Roman Abramovich purchased Chelsea in 2003, leading to a period of significant investment in players and facilities.

• The club's colors are royal blue shirts and shorts with white socks.

• Chelsea has a fierce rivalry with several clubs, most notably with Arsenal and Tottenham Hotspur.

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• The club's nickname is the "Blues" due to their blue kit.

• Chelsea has a strong global fanbase and is known for its youth academy, which has produced several talented players.

Q8. Answer: (c) In any triangle, the sum of any two angles of the triangle is greater than the measure of the third angle.

Formula used:

The basic properties of triangles:

The triangle inequality theorem: The sum of any two sides is greater than the third side.

The difference of any two sides is always smaller than the third side.

The sum of all three angles in any triangle is exactly 180°, so no two angles' sum can exceed the third angle alone.

In obtuse triangles, the greatest side forms an obtuse angle, not an acute one.

Calculation:

Statement 3 is incorrect because the sum of two angles cannot exceed the measure of the third angle:

=> The sum of all three angles in a triangle is always 180°.

Therefore The false statement is: "In any triangle, the sum of any two angles of the triangle is greater than the measure of the third angle."

Q9. Answer: (a) Gulzarilal Nanda

The correct answer is Gulzarilal Nanda

Key Points

• Gulzarilal Nanda served as the Acting Prime Minister of India twice.

• He first served as Acting Prime Minister from 27 May 1964 to 9 June 1964 after the death of Jawaharlal Nehru.

• He served again as Acting Prime Minister from 11 January 1966 to 24 January 1966 following the death of Lal Bahadur Shastri.

• Nanda was a senior leader in the Indian National Congress and had a significant role in India's independence movement.

• His contributions to the Indian political landscape were notable, particularly during times of transition in leadership.

Additional Information

• Gulzarilal Nanda was born on 4 July 1898 in Sialkot (now in Pakistan).

• He was a prominent social worker and was known for his work in labor and employment sectors.

• He was awarded the Bharat Ratna, India’s highest civilian award, in 1997.

• Nanda's tenure as Acting Prime Minister was marked by his calm and steady leadership during critical periods in Indian history.

Q10. Answer: (c) Soviet Union

The correct answer is Soviet Union

Key Points

• India's first artificial satellite, named Aryabhata, was launched with the assistance of the Soviet Union in 1975.

• The satellite was named after the famous ancient Indian mathematician and astronomer, Aryabhata.

• The launch took place on April 19, 1975, and marked a significant milestone in India's space program.

• The satellite was launched from the Kapustin Yar launch site using a Soviet Kosmos-3M launch vehicle.

• This collaboration laid the foundation for future advancements in India's space technology and exploration.

Additional Information

• The Soviet Union played a crucial role in supporting emerging space programs in various countries during the 20th century.

• India's space program has since grown significantly and now includes missions to the Moon and Mars, as well as a robust satellite launch capability.

• The Indian Space Research Organisation (ISRO) is the space agency responsible for India's space missions and has become one of the leading space agencies in the world.

• ISRO's achievements include the successful Mars Orbiter Mission (Mangalyaan) and the Chandrayaan missions to the Moon.

• International cooperation remains a key aspect of space exploration, with India collaborating with various countries and organizations to advance space science and technology.

Q11. Answer: (c) The sum of medians is less than perimeter.

Given:

We need to verify the truth of the statements given with respect to a triangle.

Formula Used:

1. Any two sides together are greater than the remaining side (Triangle Inequality Theorem).

2. The concurrent point of internal angle bisectors is called the incenter.

3. The sum of the lengths of the medians of a triangle is less than its perimeter.

4. The concurrent point of altitudes is called the orthocenter.

5. The concurrent point of medians is called the centroid.

Calculation:

We need to check each statement to find the correct one:

1. Any two sides together are less than twice the median of the remaining side.

This is not a standard property of triangles.

2. The concurrent point of internal angle bisectors is called the orthocenter.

This is incorrect. The correct term is incenter.

3. The sum of medians is less than the perimeter.

This is a true statement about triangles.

4. The concurrent point of altitudes is called the centroid.

This is incorrect. The correct term is orthocenter.

The correct answer is option 3.

Q12. Answer: (c) Trade Winds, Westerlies and Polar Easterlies

The correct answer is Trade Winds, Westerlies and Polar Easterlies

Key Points

• Trade Winds, Westerlies, and Polar Easterlies are the three primary types of planetary winds.

• Trade Winds blow from the subtropical high-pressure areas towards the equatorial low-pressure belt.

• Westerlies are winds that blow from the west to the east in the mid-latitudes between 30 and 60 degrees latitude.

• Polar Easterlies are dry, cold prevailing winds that blow from the high-pressure areas of the polar highs at the north and south poles towards low-pressure areas within the westerlies at high latitudes.

• These winds play a crucial role in the global climate system and influence weather patterns.

Additional Information

• Planetary winds are large-scale wind systems that circulate across the entire planet.

• They are primarily driven by the differential heating of the Earth's surface and the rotation of the Earth.

• Understanding these wind patterns is essential for navigation, weather forecasting, and climate studies.

• The Coriolis effect significantly influences the direction and behavior of these winds.

• These winds also interact with other atmospheric phenomena, such as jet streams and monsoons.

Q13. Answer: (c) Neither conclusion I nor II follows.

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

Conclusions:

I. All needles are fast. → Does not follow (As some needles are swords and all swords are fast. So it is possible but not definite.)

II. All swords are needles → Does not follow (As some needles are swords and all swords are fast. So it is possible but not definite.)

Therefore Here, Neither conclusion I nor II follows.

Hence, the correct answer is "Option 3"

Q14. Answer: (b) 15%

Given:

Principal (P) = sum of money

Final Amount (A) = 4 × Principal (P)

Time (T) = 20 years

Formula Used:

Simple Interest (SI) = Principal (P) × Rate (R) × Time (T)

Final Amount (A) = Principal (P) + Simple Interest (SI)

Calculation:

Since A = 4P, we have:

4P = P + SI

SI = 4P - P

SI = 3P

Using the formula for Simple Interest:

SI = P × R × T

3P = P × R × 20

=> 3 = R × 20

=> R = 3 / 20

=> R = 0.15

The simple interest rate per annum is 0.15 (or 15%).

Q15. Answer: (d) Book : Read

The logic followed here is:

Logic: Function or Purpose

Here,

Car : Travel → Car is used for the purpose of travel.

Similarly,

Book : Read → Book is used for the purpose of reading.

Hence, the correct answer is "Option 4".

Q16. Answer: (a) New Delhi

The correct answer is New Delhi

Key Points

• The 'National War Memorial' was inaugurated by Prime Minister Narendra Modi in New Delhi.

• It is a monument built to honor the soldiers of the Indian Armed Forces who have made the supreme sacrifice in various conflicts since India's independence in 1947.

• The memorial is located near India Gate and covers an area of approximately 40 acres.

• The design of the memorial includes a central obelisk, an eternal flame, and concentric circles named the Amar Chakra (Circle of Immortality), Veerta Chakra (Circle of Bravery), Tyag Chakra (Circle of Sacrifice), and Rakshak Chakra (Circle of Protection).

Additional Information

• The memorial was completed in a record time of 22 months and was dedicated to the nation on February 25, 2019.

• It also includes a Param Yodha Sthal, which houses the busts of 21 awardees of the Param Vir Chakra, India's highest military decoration.

• The National War Memorial is a place for citizens to pay homage to the brave soldiers who have laid down their lives for the country.

• The memorial serves as a symbol of national pride and a reminder of the sacrifices made by the armed forces to protect the sovereignty and integrity of India.

Q17. Answer: (d) 1500 to 500 BC

The correct answer is 1500 to 500 BC

Key Points

• The Vedic period in Indian history lasted from 1500 to 500 BC.

• This era is characterized by the composition of the Vedas, the oldest sacred texts of Hinduism.

• The Vedic period is divided into the Early Vedic period (1500–1000 BC) and the Later Vedic period (1000–500 BC).

• During this time, the foundations of Indian civilization, including its social, political, and economic structures, were established.

• The Vedic texts provide valuable insights into the culture, religion, and societal norms of the time.

• Key developments during this period include the establishment of the varna system, the rise of kingdoms, and the spread of Aryan culture.

Additional Information

• The Vedas are composed in Sanskrit and consist of four main texts: Rigveda, Samaveda, Yajurveda, and Atharvaveda.

• The Rigveda is the oldest of the Vedas and consists of hymns dedicated to various deities.

• The Later Vedic period saw the development of important texts such as the Brahmanas, Aranyakas, and Upanishads, which elaborate on Vedic rituals and philosophy.

• The Vedic period laid the groundwork for the development of classical Hinduism and the Indian cultural ethos.

• This period also witnessed the early stages of the caste system, which later became a defining feature of Indian society.

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Q18. Answer: (a) Pakhawaj - Shiv Kumar Sharma

The correct answer is Pakhawaj - Shiv Kumar Sharma

Key Points

• Shiv Kumar Sharma is renowned for his expertise in playing the Santoor, not the Pakhawaj.

• Amjad Ali Khan is a celebrated Sarod player.

• Kishan Maharaj is well-known for his skill with the Tabla.

• Pt. Ravi Shankar is globally acclaimed for his mastery of the Sitar.

• The Pakhawaj is a traditional Indian percussion instrument, distinct from the instruments associated with the other listed artists.

Additional Information

• The Pakhawaj is primarily used in the Dhrupad style of Indian classical music and is similar to the Mridangam.

• Shiv Kumar Sharma has been instrumental in popularizing the Santoor, an instrument from the Kashmir Valley, on the global stage.

• Each artist mentioned has significantly contributed to their respective instruments and Indian classical music as a whole.

Q19. Answer: (d) Mahanadi Delta

The correct answer is Mahanadi Delta

Key Points

• Mahanadi Delta is the location of India's largest salt water lake, Chilika Lake.

• Chilika Lake is a brackish water lagoon, spread over the Puri, Khurda and Ganjam districts of Odisha state on the east coast of India, at the mouth of the Daya River, flowing into the Bay of Bengal.

• It is the largest coastal lagoon in India and the second largest lagoon in the world.

• The lake is home to a number of threatened species of plants and animals. The lake region was designated as a Ramsar Site in 1981 to afford better protection.

• Chilika Lake is also an important habitat for the Irrawaddy dolphins.

Additional Information

• Chilika Lake is a significant source of livelihood for the local fishermen and is also a popular tourist destination.

• The lake's ecosystem supports a rich biodiversity, including over 160 species of birds in the peak migratory season.

• The lake has been subjected to various conservation efforts to maintain its ecological balance and to support the local communities dependent on it.

• Chilika Lake is also known for its unique and diverse flora and fauna, making it a site of significant ecological and economic importance.

Q20. Answer: (a) 6

Given:

Difference between exterior and interior angles of a regular polygon = 60º.

Interior angle is greater than the corresponding exterior angle.

Formula Used:

Exterior angle of a regular polygon = 360º / Number of sides (n)

Interior angle = 180º - Exterior angle

Calculation:

Let the number of sides be n.

Exterior angle = 360º / n

Interior angle = 180º - 360º / n

Given, Interior angle - Exterior angle = 60º

=> (180º - (360º)/n) - (360º)/n = 60º

=> 180º - (720º)/n = 60º

=> 180º - 60º = (720º)/n

=> 120º = (720º)/n

=> n = (720º)/(120º)

=> n = 6

The number of sides of the polygon is 6.

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Q21. Answer: (b) 7

Given:

$x = (\sqrt{5} + 1)/(\sqrt{5} - 1)$

$y = 1/x$

Formula used:

To find $x^2 + y^2$, use:

$x = (\sqrt{5} + 1)/(\sqrt{5} - 1)$

$y = 1/x$

Calculations:

$x = (\sqrt{5} + 1)/(\sqrt{5} - 1)$

=> Multiply numerator and denominator by $(\sqrt{5} + 1)$:

$x = ((\sqrt{5} + 1)^2)/(\sqrt{5} - 1)(\sqrt{5} + 1)$

$=> (\sqrt{5} - 1)(\sqrt{5} + 1) = 5 - 1 = 4$

$=> (\sqrt{5} + 1)^2 = 5 + 2\sqrt{5} + 1 = 6 + 2\sqrt{5}$

$x = (6 + 2\sqrt{5})/4 = (3 + \sqrt{5})/2$

$y = 2/(3 + \sqrt{5})$

=> Multiply numerator and denominator by $(3 - \sqrt{5})$:

$y = (2(3 - \sqrt{5}))/(3 + \sqrt{5})(3 - \sqrt{5})$

$=> (3 + \sqrt{5})(3 - \sqrt{5}) = 9 - 5 = 4$

$=> y = (2(3 - \sqrt{5}))/4 = (3 - \sqrt{5})/2$

$x^2 = ((3 + \sqrt{5})/2)^2 = ((3 + \sqrt{5})^2)/4 = (9 + 6\sqrt{5} + 5)/4 = (14 + 6\sqrt{5})/4 = (7 + 3\sqrt{5})/2$

$y^2 = ((3 - \sqrt{5})/2)^2 = ((3 - \sqrt{5})^2)/4 = (9 - 6\sqrt{5} + 5)/4 = (14 - 6\sqrt{5})/4 = (7 - 3\sqrt{5})/2$

$x^2 + y^2 = (7 + 3\sqrt{5})/2 + (7 - 3\sqrt{5})/2 = 14/2 = 7$

Therefore The value of $x^2 + y^2$ is 7.

Q22. Answer: (d) 20

The correct answer is 20

Key Points

- As of October 2020, there are 20 Indian Institutes of Management (IIMs) in India.
- The IIMs are premier business schools in India, established to provide quality management education and research.
- These institutes are autonomous and offer various postgraduate, doctoral, and executive education programs in management.
- The IIMs are known for their rigorous admission process, which includes the Common Admission Test (CAT), group discussions, and personal interviews.
- They have a significant impact on management education and are highly regarded both in India and globally.

Additional Information

- The first IIM was established in Calcutta (now Kolkata) in 1961.
- The IIMs are governed by the Indian Institutes of Management Act, 2017, which declares them as institutions of national importance.
- The Act provides greater autonomy to the IIMs in their operations, administration, and academic activities.
- The IIMs have a strong alumni network, with many graduates holding prominent positions in various industries worldwide.
- In addition to their academic programs, the IIMs also engage in consulting, research, and executive education, contributing to the broader business and academic community.

Q23. Answer: (c) Because of the presence of un-burnt carbon particles

The correct answer is Because of the presence of un-burnt carbon particles

Key Points

- The innermost part of a flame is black due to the presence of un-burnt carbon particles.
- In this region, the fuel is not completely combusted, leading to the presence of these particles.
- This part of the flame is also known as the dark zone or the non-luminous zone.
- The incomplete combustion in this zone occurs due to a lack of sufficient oxygen.

Additional Information

- Complete combustion occurs in the outermost part of the flame where there is an ample supply of oxygen.
- The middle part of the flame is moderately hot and partially luminous, due to partial combustion.

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• Understanding the different zones of a flame is crucial in various scientific applications, including analysis of combustion efficiency and safety measures in industrial processes.

Q24. Answer: (c) 1/2

Given:

$x^{11} = y^0$

$x = 2y$

Formula used:

Since $y^0 = 1$ (for any $y \neq 0$), we have:

$x^{11} = 1$

Calculations:

$x^{11} = 1$

$\Rightarrow x = 1^{(1/11)}$

Given $x = 2y$:

$1^{(1/11)} = 2y$

$\Rightarrow 1 = 2y$

$\Rightarrow y = 1/2$

Therefore The value of y is 1/2.

Q25. Answer: (c) It regulates how the body uses and stores glucose and fat.

The correct answer is It regulates how the body uses and stores glucose and fat.

Key Points

• Insulin is a hormone produced by the pancreas that plays a crucial role in regulating blood sugar levels.

• It helps cells in the body absorb glucose from the bloodstream to be used for energy or stored for future use, thereby lowering blood sugar levels.

• Insulin also regulates the storage of fats and helps to prevent the breakdown of muscle proteins.

• A lack of insulin or resistance to its effects can lead to conditions such as diabetes mellitus.

Additional Information

• Diabetes is a chronic condition that occurs when the body either doesn't produce enough insulin or cannot effectively use the insulin it produces.

• There are two main types of diabetes: Type 1, where the body fails to produce insulin, and Type 2, where the body becomes resistant to insulin.

• Managing diabetes often involves monitoring blood sugar levels, adhering to a healthy diet, regular physical activity, and sometimes insulin therapy or other medications.

• Research is ongoing to find better treatments and potential cures for diabetes, including advances in insulin delivery systems and the development of artificial pancreas devices.

Q26. Answer: (a) Cosmology

The correct answer is Cosmology

Key Points

• Cosmology is the scientific study of the large scale properties of the universe as a whole.

• It involves the examination of the origin, evolution, and eventual fate of the universe.

• Cosmologists seek to understand the universe's fundamental aspects, including the nature of dark matter, dark energy, and the Big Bang.

• The field combines aspects of astronomy and physics to develop theories and models that explain the universe's structure and behavior.

Additional Information

• Etymology is the study of the origin of words and how their meanings have changed throughout history.

• Anatomy is the branch of biology concerned with the study of the structure of organisms and their parts.

• Anthropology is the study of humans, human behavior, and societies in the past and present.

• Cosmology is a branch of astronomy that involves the study of the origins and eventual fate of the universe.

• The term cosmology comes from the Greek word 'kosmos' (meaning 'world' or 'universe') and 'logia' (meaning 'study of').

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Q27. Answer: (d) 8

The logic followed here is:

And,

Similarly,

=> ? = 8

Hence, "Option 4" is the correct answer.

Q28. Answer: (a) 3080

Given:

We need to find the sum of even numbers between 1 and 111.

Formula Used:

Sum of first n even numbers = n × (n + 1)

Calculation:

First even number = 2

Last even number ≤ 111 = 110

Number of even numbers between 1 and 111:

n = 110 / 2 = 55

Sum of first 55 even numbers:

Sum = 55 × (55 + 1)

Sum = 55 × 56

Sum = 3080

The sum of the even numbers between 1 and 111 is 3080.

Q29. Answer: (b) 15 : 17

Given:

Alloy A has gold and copper in the ratio 5:3.

Alloy B has gold and copper in the ratio 5:11.

Equal quantities of these two alloys are melted and mixed to form a new alloy C.

Formula Used:

When mixing two alloys in equal quantities, the ratio of the components in the new alloy can be found by averaging the individual ratios.

Calculation:

Let the quantity of each alloy be 1 unit.

Gold in Alloy A = 5/8 unit

Copper in Alloy A = 3/8 unit

Gold in Alloy B = 5/16 unit

Copper in Alloy B = 11/16 unit

Total Gold in Alloy C = (5/8 + 5/16) units

Total Copper in Alloy C = (3/8 + 11/16) units

To make the denominators the same:

=> Total Gold in Alloy C = (10/16 + 5/16) = 15/16 units

=> Total Copper in Alloy C = (6/16 + 11/16) = 17/16 units

The ratio of gold to copper in Alloy C:

=> Gold : Copper = (15/16) : (17/16)

=> Gold : Copper = 15 : 17

The ratio of gold to copper in Alloy C is 15:17.

Q30. Answer: (d) 16 km

Given:

Speed from home to office = 20 km/h

Speed walking back = 5 km/h

Total time for the journey = 4 hours

Formula Used:

Time = Distance / Speed
Total Time = Time to office + Time back home
Calculation:
Let the distance between Vinod's home and office be d km.
Time to office = d / 20
Time back home = d / 5
Total Time = (d / 20) + (d / 5)
4 = (d / 20) + (d / 5)
4 = (d / 20) + (4d / 20)
4 = 5d / 20
4 = d / 4
=> d = 16 km
The distance between his office and his home is 16 km.

Q31. Answer: (c) 2.6464...

Given:
3.36 - 2.05 + 1.33
Calculation:
Let x = 3.36; multiplying both sides by 100 gives:
=> 100x = 336.36
Now subtract:
=> 100x - x = 336.36 - 3.36
=> 99x = 333
=> x = 333/99 = 3.36
Similarly, for 2.05 and 1.33:
2.05 = 203/99 and 1.33 = 132/99
Now perform the subtraction and addition:
= (333/99) - (203/99) + (132/99)
=> (333 - 203 + 132)/99
=> 262/99 = 2.64
Answer: 2.64.
Alternate Method
Given:
3.36 - 2.05 + 1.33
Calculation:
Convert the recurring decimals directly:
= 3.36 - 2.05 + 1.33
Subtract and add the decimal parts directly:
= 1.31 + 1.33
=> 2.64
Answer: 2.64.

Q32. Answer: (b) 64 days

Given:
16 men can finish a piece of work in 8 days.
20 women and 4 men can do it in 16 days.
Formula Used:
Work = Number of workers × Time
Let 1 man's 1 day work = M
Let 1 woman's 1 day work = W
Calculation:
1. Calculate the total work in terms of man-days:

Total work = 16 men × 8 days

Total work = 128 man-days

2. Calculate combined work rate of men and women:

20 women and 4 men can complete the work in 16 days.

20W + 4M = (1/16) of total work per day

3. Express total work in terms of M and W:

20W + 4M = 1/16 × 128

20W + 4M = 8

4. From the given data, 16 men can complete the work in 8 days:

16M × 8 = 128

16M = 1/8 of total work per day

16M = 1/8 × 128

16M = 16

=> M = 1

5. Substitute M = 1 into the equation for combined work rate:

20W + 4 × 1 = 8

20W + 4 = 8

20W = 4

=> W = 4/20

=> W = 1/5

6. Calculate the time taken by 10 women to complete the work:

10 women's 1 day work = 10W

10W = 10 × 1/5

10W = 2

Time taken = Total work / 10 women's 1 day work

Time taken = 128 / 2

Time taken = 64 days

The correct answer is option 2: 64 days.

Q33. Answer: (a) Midea Group, China

The correct answer is Midea Group, China

Key Points

• Midea Group, China owns KUKA Robotics, a leading manufacturer of industrial robots.

• KUKA Robotics is known for providing innovative automation solutions for various industries, including automotive, electronics, and healthcare.

• The acquisition of KUKA by Midea Group was completed in 2016, significantly expanding Midea's capabilities in automation and robotics.

• Midea Group is a Chinese electrical appliance manufacturer, and its acquisition of KUKA highlights the growing influence of Chinese companies in the global technology and manufacturing sectors.

• KUKA's products and solutions are utilized worldwide, contributing to increased efficiency and productivity in manufacturing processes.

Additional Information

• KUKA was founded in 1898 and has its headquarters in Augsburg, Germany.

• The company specializes in industrial robots and solutions for factory automation.

• Midea Group was established in 1968 and is one of the largest producers of consumer appliances in China.

• The acquisition of KUKA is part of Midea's strategy to diversify and enhance its technological capabilities beyond traditional consumer appliances.

• The collaboration between Midea and KUKA aims to drive advancements in smart manufacturing and Industry 4.0 initiatives.

Q34. Answer: (d) (1)/({12)}

Given:

Word: TENDULKAR

Vowels in the word = E, U, A (Total vowels = 3)

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Total letters in the word = 9

Formula used:

Probability (P) = (Favorable outcomes) / (Total outcomes)

Total outcomes = Selecting 2 letters from 9 = ^9C2

Favorable outcomes = Selecting 2 vowels from 3 = $^3C2$

Calculation:

Total outcomes:

=> ^9C2 = (9 × 8) / 2 = 36

Favorable outcomes:

=> $^3C2$ = (3 × 2) / 2 = 3

Probability:

=> P = 3 / 36 = 1 / 12

Therefore The probability that both selected letters are vowels is 1/12.

Q35. Answer: (c) cloud storage services

The correct answer is cloud storage services

Key Points

• Google Drive, Sky Drive, and Dropbox are prime examples of cloud storage services.

• These services allow users to store data on remote servers accessed from the internet, enabling them to retrieve their data from any location using any device with internet connectivity.

• Cloud storage services provide benefits such as data backup, file sharing, and synchronization across multiple devices.

• They are part of the broader concept of cloud computing, which includes services like cloud storage, cloud hosting, and cloud software.

Additional Information

• Cloud storage is different from traditional storage solutions as it does not require physical hardware like external hard drives or USB drives.

• It offers scalable storage solutions where users can increase or decrease their storage capacity based on their needs.

• Some popular cloud storage services other than Google Drive, Sky Drive (now OneDrive), and Dropbox include iCloud, Amazon S3, and Box.

• Cloud storage services often come with additional security features such as encryption, access control, and secure data transfer to protect user data.

Q36. Answer: (b) Solar Energy

The correct answer is Solar Energy

Key Points

• Solar Energy is a renewable resource, unlike natural gas, liquefied petroleum gas, and coal, which are non-renewable resources.

• Renewable resources are those that can be replenished naturally over short periods of time.

• Solar energy is harnessed from the sun and does not deplete over time, making it a sustainable source of energy.

• Non-renewable resources, on the other hand, are finite and will eventually run out.

Additional Information

• Natural Gas, Liquefied Petroleum Gas, and Coal are fossil fuels that are formed from the remains of ancient plants and animals over millions of years.

• The use of non-renewable resources has environmental impacts, including greenhouse gas emissions and pollution.

• Transitioning to renewable energy sources like solar energy can help reduce the carbon footprint and combat climate change.

• Investing in renewable energy also promotes energy security and sustainability for future generations.

Q37. Answer: (a) Minamata, Japan

The correct answer is Minamata, Japan

Key Points

• The Minamata Convention on Mercury is an international treaty designed to protect human health and the environment from anthropogenic emissions and releases of mercury and mercury compounds.

• This treaty was signed in 2013 in Minamata, Japan, a city that experienced severe mercury poisoning in the mid-20th century, leading to the naming of the convention.

• The convention aims to phase out the use of mercury in various products and processes, control emissions, and regulate

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mercury mining and trade.

• It includes provisions for the safe storage and disposal of mercury waste, as well as measures to reduce mercury pollution in artisanal and small-scale gold mining.

• The treaty entered into force on August 16, 2017, after ratification by over 50 countries.

Additional Information

• Mercury is a toxic element that poses significant risks to human health and the environment. It can cause neurological and behavioral disorders, particularly in developing fetuses and young children.

• The Minamata Convention is named after the Japanese city of Minamata, where industrial discharge of mercury into the water caused widespread mercury poisoning, known as Minamata disease, in the 1950s and 1960s.

• The convention was developed under the auspices of the United Nations Environment Programme (UNEP) and is part of global efforts to address environmental pollution and promote sustainable development.

• Countries that are parties to the convention are required to develop national action plans to reduce mercury emissions and releases, promote the use of alternatives, and raise public awareness about the risks of mercury exposure.

• Implementation of the Minamata Convention is supported by the Global Environment Facility (GEF) and other international organizations, which provide technical and financial assistance to countries in their efforts to comply with the treaty's provisions.

Q38. Answer: (d) HCF of fractions = HCF of numerators/LCM of denominators

Formula Used:

HCF of fractions = HCF of numerators/LCM of denominators

Calculation:

To verify the formula:

Let the fractions be a/b and c/d.

HCF of the fractions = HCF(a/b, c/d)

Numerators: a, c

Denominators: b, d

HCF of numerators = HCF(a, c)

LCM of denominators = LCM(b, d)

=> HCF of fractions = HCF(a, c) / LCM(b, d)

Therefore, the correct option is 4.

Q39. Answer: (d) Cristiano Ronaldo

The correct answer is Cristiano Ronaldo

Key Points

• Cristiano Ronaldo is widely known by his nickname 'CR7'.

• The nickname 'CR7' is derived from his initials (CR) and his jersey number (7).

• Ronaldo has played for top football clubs such as Manchester United, Real Madrid, and Juventus.

• He is considered one of the greatest footballers of all time and has won numerous awards, including multiple Ballon d'Or titles.

Additional Information

• Cristiano Ronaldo was born on 5th February 1985 in Madeira, Portugal.

• He began his professional career with Sporting CP before moving to Manchester United in 2003.

• Ronaldo has also had a successful international career with the Portugal national team, winning the UEFA European Championship in 2016 and the UEFA Nations League in 2019.

• His exceptional skills, work ethic, and dedication have earned him a massive global fan following.

Q40. Answer: (b) Andromeda Galaxy

The correct answer is Andromeda Galaxy

Key Points

• Andromeda Galaxy is the nearest spiral galaxy to the Milky Way.

• It is located approximately 2.537 million light-years from the Milky Way.

• The Andromeda Galaxy is also known as Messier 31 or M31.

• It is on a collision course with the Milky Way, and the two galaxies are expected to merge in about 4.5 billion years.

• Andromeda Galaxy is visible to the naked eye in the night sky under good conditions and is one of the brightest Messier objects.

Additional Information

• The Milky Way and the Andromeda Galaxy are part of the Local Group of galaxies, which contains more than 54 galaxies.

• The Triangulum Galaxy (M33) is also part of the Local Group and is the third-largest galaxy in the group.
• The Andromeda Galaxy has a diameter of about 220,000 light-years, making it the largest galaxy in the Local Group.
• It contains approximately one trillion stars, which is more than twice the number of stars in the Milky Way.
• The Andromeda Galaxy has a number of satellite galaxies, including M32 and M110.

Q41. Answer: (c) Assured pension on a guaranteed return of 8% after making a minimum initial investment for Senior Citizen

The correct answer is Assured pension on a guaranteed return of 8% after making a minimum initial investment for Senior Citizen

Key Points

• The Pradhan Mantri Vaya Vandana Yojana (PMVVY) is a pension scheme launched by the Government of India for senior citizens aged 60 years and above.
• It aims to provide an assured return of 8% per annum payable monthly for a period of 10 years.
• Under the scheme, the pensioner can opt for a monthly, quarterly, half-yearly, or yearly pension.
• The scheme is managed by the Life Insurance Corporation of India (LIC).
• The maximum investment limit is Rs. 15 lakh per senior citizen.
• After the policy term of 10 years, the purchase price along with the final pension installment is returned to the policyholder.
• In case of the pensioner's death during the policy term of 10 years, the purchase price is returned to the beneficiary.

Additional Information

• The scheme was launched by the Government on 4th May 2017 and was available for subscription till 31st March 2020.
• However, the scheme has been extended and is available for investment till 31st March 2023.
• The scheme also provides a loan facility after the completion of 3 policy years, up to a maximum of 75% of the purchase price.
• The interest on the loan shall be recovered from the pension installments, and the loan amount shall be recovered from the claim proceeds.
• The scheme is exempt from the Goods and Services Tax (GST).

Q42. Answer: (c) Fruit : Tree

The logic followed here is:

Logic: Categories and instances.

Here,

Parrot : Bird → Parrot is an example of the category Bird.

Similarly,

Car : Vehicle → Car is an example of the category Vehicle.

However,

Fruit : Tree → Fruit is not an instance of a category Tree, but rather a product of it. Hence, this relationship is different from the rest.

Thus, the correct answer is "Option 3".

Alternate Method- "Parrot : Bird," "Car : Vehicle," and "Carrot : Vegetable" all describe a specific instance (parrot, car, carrot) as part of a broader category (bird, vehicle, vegetable).

• However, "Fruit : Tree" does not fit the pattern because a fruit is a product of a tree, not a type or category of tree.

Q43. Answer: (a) 1699

The correct answer is 1699

Key Points

• 1699 is the year when Shri Guru Gobind Singh Ji founded the 'Khalsa Panth'.
• Shri Guru Gobind Singh Ji was the tenth Sikh Guru, a spiritual master, warrior, poet, and philosopher.
• The founding of the Khalsa Panth was a significant event in Sikh history, aimed at instilling a sense of unity, courage, and discipline among Sikhs.
• The Khalsa Panth was created to uphold righteousness and protect the oppressed.

Additional Information

• Shri Guru Gobind Singh Ji introduced the Five Ks (Kesh, Kara, Kanga, Kachera, and Kirpan) which are the five articles of faith that Khalsa Sikhs wear at all times.
• The formation of the Khalsa Panth marked the establishment of the Sikh identity and its martial tradition.
• The event took place on Vaisakhi, a major Sikh festival, which falls in April.
• The Khalsa Panth played a crucial role in the defense of religious freedom and justice during the Mughal era in India.

Q44. Answer: (c) Amazon Basin

The correct answer is Amazon Basin

Key Points

• The Amazon Basin is the largest drainage basin in the world.

• It covers an area of approximately 7 million square kilometers.

• The basin spans across multiple countries in South America, including Brazil, Peru, Bolivia, Colombia, Ecuador, Venezuela, and Guyana.

• The Amazon River, which runs through the basin, is the second longest river in the world and carries the largest volume of water.

• The basin is known for its rich biodiversity and is home to the Amazon Rainforest, which is often referred to as the "lungs of the Earth."

Additional Information

• The Amazon Rainforest produces approximately 20% of the world's oxygen.

• The basin plays a crucial role in the global water cycle and climate regulation.

• It is home to an estimated 390 billion individual trees and about 16,000 species of plants.

• The Amazon Basin also supports a diverse range of wildlife, including jaguars, pink river dolphins, and macaws.

• Deforestation and climate change pose significant threats to the Amazon Basin, impacting its ecosystem and biodiversity.

• Efforts are being made globally to conserve and protect this vital region.

Q45. Answer: (c) Birju Maharaj

The correct answer is Birju Maharaj

Key Points

• Birju Maharaj is a world-renowned Kathak dancer.

• He is considered one of the greatest exponents of the Lucknow Kalka-Bindadin gharana of Kathak dance in India.

• Birju Maharaj has received numerous awards, including the Padma Vibhushan, India's second-highest civilian award.

• He has performed extensively across the globe, showcasing the beauty and intricacies of Kathak dance.

• Birju Maharaj has also contributed to the field of dance as a choreographer and mentor, training many students who have gone on to become prominent dancers themselves.

Additional Information

• Kathak is one of the eight major forms of Indian classical dance.

• It traces its origins to the nomadic bards of ancient northern India, known as Kathakars or storytellers.

• The dance form emphasizes intricate footwork, spins, and expressive gestures and facial expressions.

• Kathak has evolved and incorporated influences from Persian and Mughal dance forms over centuries.

• It is traditionally performed to the accompaniment of classical Indian music, including instruments like the tabla, pakhawaj, and harmonium.

Q46. Answer: (c) 1.82

Given:

$a = 0.1 + \sqrt{0.9}$

$b = 0.1 - \sqrt{0.9}$

Formula Used:

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

Calculation:

$a + b = (0.1 + \sqrt{0.9}) + (0.1 - \sqrt{0.9})$

$a + b = 0.2$

$ab = (0.1 + \sqrt{0.9})(0.1 - \sqrt{0.9})$

$ab = (0.1)^2 - (\sqrt{0.9})^2$

$ab = 0.01 - 0.9$

$ab = -0.89$

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

$a^2 + b^2 = (0.2)^2 - 2(-0.89)$

$a^2 + b^2 = 0.04 + 1.78$

$\Rightarrow a^2 + b^2 = 1.82$

The value of $(a^2 + b^2)$ is 1.82.

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Q47. Answer: (a) India

The correct answer is India

Key Points

• India hosted the 14th Conference of Parties (COP) of the United Nations Convention to Combat Desertification (UNCCD).

• The event took place in September 2019 in New Delhi.

• The COP14 aimed to address desertification, land degradation, and drought issues worldwide.

• India's hosting of the event highlights its commitment to sustainable land management and combating desertification.

• The conference saw participation from various countries, international organizations, and experts in the field.

Additional Information

• The United Nations Convention to Combat Desertification (UNCCD) was established in 1994 and is the sole legally binding international agreement linking environment and development to sustainable land management.

• The Conference of Parties (COP) is the supreme decision-making body of the UNCCD, where member countries review the implementation of the Convention and the progress made.

• Previous COPs have been hosted by various countries, including Turkey (COP12) and China (COP13).

• Desertification affects millions of people worldwide, leading to loss of arable land, reduced agricultural productivity, and increased poverty.

• The UNCCD works towards achieving Land Degradation Neutrality (LDN) by 2030, a key target under the Sustainable Development Goals (SDGs).

Q48. Answer: (b) Only argument (ii) is strong.

Given:

Statement :

Does assigning class monitors harbour the feeling of jealousy among students?

Now,

Arguments :

(i) Yes, all class monitors start to behave arrogantly - This argument is weak because it makes a sweeping generalization about the behavior of all class monitors, without any substantial reasoning or evidence.

(ii) No, it teaches them equity by providing every student a chance to learn team spirit under a leader - This argument is strong because it presents a reasoned perspective that focuses on the positive aspects of assigning class monitors, such as promoting equity and leadership skills.

Thus, Only argument (ii) is strong.

Hence, the correct answer is "Option 4".

Q49. Answer: (b) 0.7

Given:

6^(1.2) × 36^? × 30^(2.4) × 25^(1.3) = 30^5

Formula used:

Use the laws of exponents: a^x × a^y = a^(x + y)

Calculation:

Let ? = x.

Convert 36 and 25 to powers of 6 and 5:

=> 6^(1.2) × (6²)^x × 30^(2.4) × (5²)^(1.3) = 30^5

=> 6^(1.2) × 6^(2x) × (6 × 5)^(2.4) × 5^(2.6) = 30^5

Now, express 30^5 as a combination of 6 and 5:

=> (6 × 5)^5 = 6^5 × 5^5

Now equate the powers of 6 and 5 on both sides:

=> 6^(1.2 + 2x +2.4) × 5^5 = 6^5 × 5^5

For base 6:

=> 3.6 + 2x = 5

=> 2x = 5 - 3.6

=> 2x = 1.4

=> x = 0.7

Therefore The correct value of ? is 0.7.

Q50. Answer: (c) 3

Given:

The sum of two numbers = 98.

Their HCF = 14.

Formula Used:

Let the two numbers be 14a and 14b, where a and b are coprime numbers (HCF of a and b is 1).

Sum of numbers: 14a + 14b = 98

Calculation:

14a + 14b = 98

=> a + b = 98 / 14

=> a + b = 7

We need to find pairs (a, b) such that a + b = 7 and HCF(a, b) = 1.

Possible pairs:

1. (1, 6)

2. (2, 5)

3. (3, 4)

Total pairs = 3

There are 3 such pairs that can be formed.

Q51. Answer: (c) Only argument (i) is strong.

Given:

Statement :

Computer literacy is desirable.

Now,

Arguments :

I. Yes, as most of the work is done efficiently - True (As computer literacy helps in performing tasks more efficiently, this argument is valid).

II. No, computers are a nuisance - False (This argument is not strong as it does not provide a substantial reason against computer literacy and is subjective).

So, Only argument I strengthens the statement.

Hence, the correct answer is "Option 3".

Q52. Answer: (a) 20

Given:

60% of (a - b) = 40% of (a + b)

Formula Used:

To find the percentage of aaaaaa

that is bbbbbb

.

Calculation:

60% of (a - b) = 40% of (a + b)

0.6(a - b) = 0.4(a + b)

=> 0.6a - 0.6b = 0.4a + 0.4b

=> 0.6a - 0.4a = 0.4b + 0.6b

=> 0.2a = 1.0b

=> a = 5b

=> b = a / 5

Percentage of aaaaa

that is bbbbb

= (b / a) × 100%

=> Percentage of aaaaa

that is bbbbb

= (a / 5a) × 100%

=> Percentage of aaaaa

that is bb = (1 / 5) × 100%

=> Percentage of aa that is bb = 20%

The correct answer is option 1.

Q53. Answer: (b) 8 p.m.

Given:

Distance between two stations A and B = 420 km.

Speed of the train starting from A = 60 km/h.

Speed of the train starting from B = 30 km/h.

Train from A starts at 3 p.m.

Train from B starts at 4 p.m.

Formula Used:

Relative speed of two trains moving towards each other = Speed of train 1 + Speed of train 2

Time = Distance / Relative speed

Calculation:

Train from A travels for 1 hour before the train from B starts.

Distance covered by train from A in 1 hour = 60 km/h × 1 h = 60 km

Remaining distance = 420 km - 60 km = 360 km

Relative speed of both trains = 60 km/h + 30 km/h = 90 km/h

Time taken to cover the remaining distance:

=> Time = 360 km / 90 km/h

=> Time = 4 hours

Trains meet 4 hours after 4 p.m.

=> 4 p.m. + 4 hours = 8 p.m.

The trains meet at 8 p.m.

Q54. Answer: (a) A body operating at the state level to investigate an individual's complaint against public servants or any...

The correct answer is Option 1

Key Points

• Lokayukta is a body operating at the state level to investigate an individual's complaint against public servants or any politician with respect to corruption.

• It aims to curb corruption, maladministration, and misuse of power by public servants.

• The institution of Lokayukta was established following the model of the Ombudsman in Scandinavian countries.

• It provides a mechanism to address grievances of the public against the administrative actions of government officials.

• The Lokayukta is an independent body and is not subject to the direction or control of any external authority.

Additional Information

• The Lokayukta Act varies from state to state, as each state in India enacts its own legislation for the appointment and powers of the Lokayukta.

• The first Lokayukta was set up in Maharashtra in 1971.

• The role of Lokayukta is to investigate and report on allegations of corruption and maladministration against public functionaries.

• The recommendations made by the Lokayukta are advisory and not binding on the government.

• The Lokayukta is often considered the 'watchdog of the administration' in the respective states.

Q55. Answer: (d) 17

Given:

The expression is 30 - (3 × 4 + 15 ÷ 3) + 8 × 3 ÷ 6.

Formula Used:

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

Calculation:

Evaluate inside the parentheses:

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=> 3 × 4 = 12

=> 15 ÷ 3 = 5

=> 3 × 4 + 15 ÷ 3 = 12 + 5 = 17

Now, substitute back into the expression:

=> 30 - 17 + 8 × 3 ÷ 6

Next, perform multiplication and division from left to right:

=> 8 × 3 = 24

=> 24 ÷ 6 = 4

Substitute back into the expression:

=> 30 - 17 + 4

Finally, perform addition and subtraction from left to right:

=> 30 - 17 = 13

=> 13 + 4 = 17

The value is 17.

Q56. Answer: (d) Russia

The correct answer is Russia

Key Points

• Russia unveiled the world's first floating nuclear power station.

• The floating nuclear power station is named Akademik Lomonosov.

• It is designed to provide electricity to remote areas of Russia.

• The plant can generate enough electricity to power a town of 100,000 people.

• It is intended to supply power to areas where it is difficult to construct traditional power plants.

Additional Information

• Akademik Lomonosov was constructed by the state nuclear power corporation, Rosatom.

• The power station is intended to replace aging nuclear plants and to supply power to remote mining operations.

• It marks a significant advancement in the use of nuclear energy for non-traditional applications.

• The floating nature of the plant allows it to be relocated as needed, providing flexibility in power distribution.

• Russia plans to construct more floating nuclear power stations to enhance its energy infrastructure.

Q57. Answer: (d) Dr. SZ Qasim

The correct answer is Dr. SZ Qasim

Key Points

• Dr. SZ Qasim led India's first expedition to the Antarctic in 1982.

• He was a renowned marine biologist and played a crucial role in India's Antarctic program.

• The expedition marked India's entry into Antarctic exploration and research, highlighting the country's scientific capabilities on a global stage.

• Dr. SZ Qasim's leadership in this mission paved the way for future Indian expeditions to the Antarctic.

Additional Information

• Dr. SZ Qasim was awarded the Padma Shri in 1974 and the Padma Bhushan in 1982 for his contributions to science and oceanography.

• India's Antarctic program has since grown significantly, with the establishment of research stations such as Maitri and Bharati on the continent.

• The Antarctic Treaty System governs international relations with respect to Antarctica, ensuring that the continent is used for peaceful purposes and scientific research.

• India became a signatory to the Antarctic Treaty in 1983, following its successful expedition.

Q58. Answer: (b) Chittaranjan Das

The correct answer is Chittaranjan Das

Key Points

• Chittaranjan Das was a prominent Indian freedom fighter and political leader.

• He co-founded the Swaraj Party in 1923 along with Motilal Nehru.

• The Swaraj Party was established to express the discontent of a section of Indian National Congress members with the policies of the British government.

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• The party aimed to attain self-governance and was active in the legislative councils.
• Chittaranjan Das was also known as Deshbandhu, meaning "Friend of the Nation".
Additional Information
• Chittaranjan Das was also a renowned lawyer and defended many freedom fighters in court.
• He played a significant role in the Non-Cooperation Movement led by Mahatma Gandhi.
• His leadership and vision greatly contributed to the Indian independence struggle.
• Chittaranjan Das passed away in 1925, but his legacy continues to inspire generations.
• The Swaraj Party eventually merged back into the Indian National Congress.

Q59. Answer: (a) 12.5%

Given:
Amount after 2 years = Rs. 600
Amount after a further period of 5 years (total 7 years) = Rs. 900
Formula Used:
Simple Interest (SI) = Principal (P) × Rate (R) × Time (T)
Amount (A) = Principal (P) + Simple Interest (SI)
Calculation:
Let the Principal be Rs. P and the Rate of interest be R.
Amount after 2 years:
Rs. 600 = Rs. P + Rs. P × R × 2
Rs. 600 = Rs. P(1 + 2R)
Amount after 7 years:
Rs. 900 = Rs. P + Rs. P × R × 7
Rs. 900 = Rs. P(1 + 7R)
Dividing the second equation by the first equation:
900/600 = (P(1 + 7R))/(P(1 + 2R))
=> 3/2 = (1 + 7R)/(1 + 2R)
=> 3(1 + 2R) = 2(1 + 7R)
=> 3 + 6R = 2 + 14R
=> 3 - 2 = 14R - 6R
=> 1 = 8R
=> R = 1 / 8
=> R = 0.125
The interest rate is 0.125 (12.5%).

Q60. Answer: (b) 32

The number of squares in the given figure is shown below:
1) Total number of squares = (m × n) + (m - 1)(n - 1) + (m - 2)(n - 2)
where, n = rows and m = columns
So, Total number of squares = (3 × 5) + (3 - 1)(5 - 1) + (3 - 2)(5 - 2) => 15 + (2 × 4) + (1 × 3) => 15 + 8 + 3 = 26
2) Total number of squares = 6
Thus, total number of squares = (26 + 6) = 32
Hence, "Option 2" is the correct answer.

Q61. Answer: (a) 746

The logic followed here is: Power → (Number of circles × 2)
a → (1 circle × 2) => a2
b → (2 circles × 2) => b^4
c → (3 circles × 2) => c^6
=> a2 + b4 + c6
Similarly,
2 → (2 circles × 2) => 24
3 → (3 circles × 2) => 36

1 → (4 circles × 2) => 1^8

=> 24 + 36 + 18

=> 16 + 729 + 1

=>746

Hence, "Option 1" is the correct answer.

Q62. Answer: (c) 7 / 13

Shortcut Trick

Required probability = (Ways to choose 1 White × Ways to choose 1 Black) ÷ Total ways to choose 2 balls

Probability = (6 × 7) ÷ $^{13}C2$

Probability = 42 ÷ [(13 × 12) ÷ 2]

Probability = 42 ÷ 78 = 7 / 13

Therefore The correct answer is 7 / 13.

Alternate Method

Given:

Number of white balls = 6

Number of black balls = 7

Total number of balls = 6 + 7 = 13

6 White Balls

7 Black Balls

Total = 13 Balls

Draw 2 Balls → 1 White & 1 Black → 42 ways

Formula Used:

Probability = Favorable Outcomes ÷ Total Possible Outcomes

$^{n}C_r = n! \div [r! \times (n - r)!]$

Calculations:

=> Total possible outcomes of drawing 2 balls from 13 = $^{13}C2$

=> $^{13}C2 = (13 \times 12) \div (2 \times 1) = 78$

=> For the balls to be of different colours, 1 white ball and 1 black ball must be drawn.

=> Favorable outcomes = ^6C1 × ^7C1

=> Favorable outcomes = 6 × 7 = 42

=> Required Probability = 42 ÷ 78

=> Dividing numerator and denominator by 6, we get 7 / 13

Therefore The correct answer is 7 / 13.

Additional Information

Combination vs Permutation

Combination ($^{n}C_r$) is used when the order of selection does not matter. Permutation ($^{n}P_r$) is used when arrangement or sequence order is important.

Independent Events

Two events are independent if the occurrence of one does not affect the probability of the other. For independent events A and B: P(A and B) = P(A) × P(B).

Mutually Exclusive Events

Events that cannot occur simultaneously at the exact same time. For mutually exclusive events A and B: P(A or B) = P(A) + P(B).

Q63. Answer: (c) Jizyah

The correct answer is Jizyah

Key Points

• Jizyah was a tax levied on non-Muslim subjects during the Mughal Empire.

• It was primarily imposed on able-bodied adult males of non-Muslim communities.

• The revenue from Jizyah was used to fund the state and its military expenditures.

• Non-Muslims who paid Jizyah were granted protection and exemption from military service.

Additional Information

• The term Sharia refers to Islamic law derived from the Quran and Hadith.

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• Shafi'i is one of the four Sunni schools of Islamic jurisprudence.

• Jahiliyah denotes the period of ignorance before the advent of Islam.

Q64. Answer: (c) 10

The logic followed here is: The sum of the numbers either row-wise or column-wise is 20.

So,

1st row)=> 7 + 8 + 5 = 20

And,

3rd row)=> 6 + 2 + 12 = 20

Similarly,

2nd row)=> 7 + ? + 3 = 20 => 10 + ? = 20 => ? = 10

Hence, "Option 3" is the correct answer.

Q65. Answer: (c) 25 cm

Given:

Perimeter of the triangle = 56 cm

Area of the triangle = 84 cm^2

Formula used:

Perimeter of a right-angled triangle = a + b + c

Area of a right-angled triangle = (1/2) × base × height

Pythagoras theorem: $c^2 = a^2 + b^2$

Calculations:

Let a and b be the two perpendicular sides, and c be the hypotenuse.

=> a + b + c = 56 (Perimeter)

=> (1/2) × a × b = 84 (Area)

=> a × b = 168

Now, solve for a, b, and c:

From a + b + c = 56, express c as:

=> c = 56 - (a + b)

Using Pythagoras theorem: $c^2 = a^2 + b^2$

Substitute c = 56 - (a + b) and a × b = 168 into the equations.

Solutions for a and b: a = 7 cm, b = 24 cm

=> c = 56 - (7 + 24) = 25 cm

Therefore The length of the hypotenuse is 25 cm.

Q66. Answer: (a) Bankim Chandra Chattopadhyay

The correct answer is Bankim Chandra Chattopadhyay

Key Points

• Bankim Chandra Chattopadhyay composed the National Song of India, "Vande Mataram".

• The song was written in Sanskrit and is part of his famous novel, Anandamath, published in 1882.

• "Vande Mataram" played a vital role in the Indian independence movement, inspiring freedom fighters and promoting a sense of patriotism.

• The first two verses of the song were adopted as the National Song of India on January 24, 1950, by the Constituent Assembly.

• The song is a tribute to the motherland, depicting the rich cultural heritage and beauty of India.

Additional Information

• Bankim Chandra Chattopadhyay (1838-1894) was a renowned Bengali writer, poet, and journalist, and is considered one of the greatest novelists in Indian literature.

• He is also known for his other literary works, including "Kapalkundala", "Durgeshnandini", and "Krishnakanter Will".

• Bankim Chandra Chattopadhyay was honored with the title of Rajarshi by the British government in recognition of his literary contributions.

• His works continue to inspire and influence Indian literature and culture.

• "Vande Mataram" was set to music by Rabindranath Tagore, the first Asian Nobel laureate.

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Q67. Answer: (a) 10

Given:

x2 - 3x + 1 = 0

Calculations:

We rewrite the expression as: (x2 + 1/x2) + (x + 1/x)

x2 = 3x - 1

Divide both sides of the equation by x:

=> x + 1/x = 3

Square both sides of the equation for x + 1/x:

=> (x + 1/x)2 = 9

=> x2 + 1/x2 + 2 = 9

=> x2 + 1/x2 = 7

Now, x2 + 1/x2 + x + 1/x = 7 + 3 = 10

Therefore The value of the expression is 10.

Q68. Answer: (c) Pradhan Mantri Mudra Yojana (PMMY)

The correct answer is Pradhan Mantri Mudra Yojana (PMMY)

Key Points

• Pradhan Mantri Mudra Yojana (PMMY) was launched on 8 April 2015 to provide loans to non-corporate, non-farm small/micro enterprises.

• Under PMMY, loans are categorized into three sub-schemes:

• Shishu: covering loans up to Rs. 50,000.

• Kishore: covering loans between Rs. 50,000 to Rs. 5.0 lakh.

• Tarun: covering loans between Rs. 5.0 lakh to Rs. 10.0 lakh.

• The scheme aims to promote entrepreneurship and increase the availability of credit to small businesses.

Additional Information

• The scheme is implemented through partner institutions like banks, non-banking financial companies (NBFCs), and microfinance institutions (MFIs).

• It is aimed at providing financial support to small businesses, thereby generating employment opportunities and contributing to the economic growth of the country.

• PMMY is part of the government's effort to promote inclusive growth and financial inclusion by extending credit to underserved sections of society.

• Borrowers under PMMY do not require any collateral security to avail the loan, making it accessible to a larger number of small entrepreneurs.

Q69. Answer: (a) 100

Given:

60% of x added to 60, then the result is x + 20.

Formula Used:

0.60 × x + 60 = x + 20

Calculation:

Given equation: 0.60 × x + 60 = x + 20

=> 0.60x + 60 = x + 20

=> 0.60x - x = 20 - 60

=> -0.40x = -40

=> x = -40 / -0.40

=> x = 100

The value of number x is 100.

Q70. Answer: (d) 3 hours, 19 minutes, 48 seconds

Given:

Total time = 3.33 hours

Formula Used:

1 hour = 60 minutes

1 minute = 60 seconds

Calculation:

Hours part = 3 hours

Minutes part = 0.33 × 60

=> Minutes part = 19.8 minutes

Minutes = 19 minutes

Seconds part = 0.8 × 60

=> Seconds part = 48 seconds

Thus, 3.33 hours = 3 hours, 19 minutes, 48 seconds

The correct answer is option 4.

Q71. Answer: (b) (7)/(2√3)

Given:

cos A + sec A = 5/2

A is an acute angle.

Formula used:

cos A = 1/sec A

sin A = 1/cosec A

Identity: $\sec^2 A - \tan^2 A = 1$

Calculations:

Let cos A = x. Then, sec A = 1/x.

=> x + 1/x = 5/2

Multiply both sides by 2x:

=> $2x^2 + 2 = 5x$

=> $2x^2 - 5x + 2 = 0$

Solving the quadratic equation:

=> x = 2/2 or x = 1/2

Thus, cos A = 1/2 (since A is acute).

=> sin A = $\sqrt{(1 - \cos^2 A)} = \sqrt{(1 - (1/2)^2)}$

=> sin A = √(3) / 2

Now, find sin A + cosec A:

=> sin A + cosec A = √(3) / 2 + 2 / √(3)

=> sin A + cosec A = (3 + 4) / 2√3

Therefore sin A + cosec A = 7 / 2√3.

Q72. Answer: (d) Hyderabad

The correct answer is Hyderabad

Key Points

• The Nuclear Fuel Complex (NFC) of India is located in Hyderabad, Telangana.

• Established in 1971, NFC is a major industrial unit of the Department of Atomic Energy (DAE), Government of India.

• The complex is responsible for the supply of nuclear fuel bundles and reactor core components for all the nuclear power reactors operating in India.

• NFC plays a critical role in India's nuclear power generation program and the production of heavy water reactors and pressurized heavy water reactors.

• The facility also manufactures zirconium alloy cladding tubes and other structural materials required for the nuclear power reactors.

Additional Information

• Hyderabad is the capital city of the Indian state of Telangana and is known for its rich history, culture, and landmarks such as the Charminar.

• The city is a major center for the technology industry, with numerous multinational companies having their offices there.

• Hyderabad is also known for its educational institutions, including the University of Hyderabad and the Indian School of Business.

• The city's economy is driven by sectors such as information technology, pharmaceuticals, and biotechnology.

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• Hyderabad has a well-developed infrastructure and is connected to other major cities through its international airport and extensive rail and road networks.

Q73. Answer: (d) Light Amplification by Stimulated Emission of Radiation

The correct answer is Light Amplification by Stimulated Emission of Radiation

Key Points

• LASER stands for Light Amplification by Stimulated Emission of Radiation.

• It is a device that emits light through a process of optical amplification based on the stimulated emission of electromagnetic radiation.

• LASERs are used in various applications including medicine, industry, and communications.

• The concept of stimulated emission was first proposed by Albert Einstein in 1917.

Additional Information

• The first working LASER was built by Theodore H. Maiman at Hughes Research Laboratories in 1960.

• There are different types of LASERs such as gas lasers, solid-state lasers, and semiconductor lasers, each with unique properties and applications.

• LASER technology has evolved significantly and continues to be an area of active research and development.

Q74. Answer: (d) BZ

Given: A family includes six members A, B, C, X, Y and Z. There are two married couples. There is one engineer, one scientist, one actor, one painter and two cricketers in the group.

1) B is an engineer and the father of Y.

2) Y and C are sisters and are cricketers.

3) A is the mother of C and an actor.

4) Z is the grandfather of C and is a scientist.

5) X is the grandmother of Y and is a painter.

As X and Z can be either paternal grandparents or maternal grandparents, therefore there are two possible cases.

Case 1)

Case 2)

Thus in both cases, BZ are the only male members of the family.

Hence, the correct answer is "Option 4.

Q75. Answer: (c) 49, 16, 65

The logic followed here is:

4

3 = 16; 9; 25

4^2 = 16; 3^2 = 9; (16 + 9) = 25 => 16; 9; 25

And,

6

2 = 36; 4; 40

62 = 36; 22 = 4; (36 + 4) = 40 => 36; 4; 40

Similarly,

7

4 = ?; ?; ?

72 = 49; 42 = 16; (49 + 16) = 65 => 49; 16; 65

Hence, "Option 3" is the correct answer.

Q76. Answer: (c) 1993

The correct answer is 1993

Key Points

• The European Union (EU) was formally established with the signing of the Maastricht Treaty on November 1, 1993.

• The EU is a political and economic union of member countries that are located primarily in Europe.

• The Maastricht Treaty marked a significant milestone in the process of European integration, introducing new forms of cooperation between the member states' governments in areas such as defense, justice, and home affairs.

• The treaty also established the three pillars of the European Union: the European Communities, the Common Foreign and

Security Policy (CFSP), and the Justice and Home Affairs (JHA).

Additional Information

• The EU has its origins in the European Coal and Steel Community (ECSC) and the European Economic Community (EEC), formed by six countries in 1951 and 1958, respectively.

• The Maastricht Treaty also laid the groundwork for the creation of the euro, the EU's single currency, which was introduced in 1999 and came into physical circulation in 2002.

• The EU operates through a hybrid system of supranational and intergovernmental decision-making and has its own institutions, such as the European Commission, the European Parliament, and the European Court of Justice.

• As of now, the EU has 27 member countries, following the United Kingdom's withdrawal from the union in 2020, commonly known as Brexit.

Q77. Answer: (a) 9 : 1

Given:

a : b = 2 : 3

Formula Used:

If a : b = m : n, then a = km and b = kn for some constant k.

Calculation:

Let a = 2k and b = 3k

We need to find (3a + 7b) : (6a - 3b)

Substitute a = 2k and b = 3k:

3a + 7b = 3(2k) + 7(3k)

3a + 7b = 6k + 21k

3a + 7b = 27k

6a - 3b = 6(2k) - 3(3k)

6a - 3b = 12k - 9k

6a - 3b = 3k

Now, (3a + 7b) : (6a - 3b) = 27k : 3k

(3a + 7b) : (6a - 3b) = 27 : 3

(3a + 7b) : (6a - 3b) = 9 : 1

The value of (3a + 7b) : (6a - 3b) is 9 : 1.

Q78. Answer: (c) Sub region or one of the postal circles

The correct answer is Sub region or one of the postal circles

Key Points

• The first two digits of the Postal Index Number (PIN) in India represent a sub region or one of the postal circles.

• India is divided into nine PIN zones, including one for the Indian Army.

• Each postal circle is assigned a unique range of PIN codes, which helps in efficiently sorting and delivering mail.

• The system was introduced on 15 August 1972 by Shriram Bhikaji Velankar, an additional secretary in the Union Ministry of Communications.

Additional Information

• The PIN system is essential for ensuring the speedy and accurate delivery of mail across India.

• Each digit in the PIN code has a specific significance, with the first digit representing the zone, the second digit representing the sub-region, and the third digit representing the sorting district.

• The remaining three digits are assigned to individual post offices within the sorting district.

• The introduction of the PIN system has greatly improved the efficiency and reliability of the Indian postal service.

Q79. Answer: (b) √6 cm

Given:

Side of the equilateral triangle = 2√2 cm.

Formula Used:

Length of perpendicular (height) in an equilateral triangle = √3/2 × side

Calculation:

Side = 2√2 cm

Length of perpendicular (height) = √3/2 × 2√2

=> Length of perpendicular (height) = √3 × √2

=> Length of perpendicular (height) = √6

The length of the perpendicular drawn from vertex to the side is √6 cm.

Q80. Answer: (b) Ranchi, Jharkhand

The correct answer is Ranchi, Jharkhand

Key Points

• A 33 ft tall bronze statue of Swami Vivekananda was inaugurated in Ranchi, Jharkhand on National Youth Day in 2019.

• The statue was unveiled by the Chief Minister of Jharkhand.

• National Youth Day is celebrated on January 12th each year to honor the birth anniversary of Swami Vivekananda.

• Swami Vivekananda is renowned for his teachings on youth empowerment and his contributions to Indian philosophy and spirituality.

• The statue stands as a symbol of inspiration for the youth, encouraging them to follow the principles and values espoused by Swami Vivekananda.

Additional Information

• Swami Vivekananda was born on January 12, 1863, in Kolkata, West Bengal.

• He was a key figure in the introduction of Indian philosophies of Vedanta and Yoga to the Western world.

• Swami Vivekananda's speech at the Parliament of the World's Religions in Chicago in 1893 is highly regarded and remembered.

• National Youth Day was declared by the Indian Government in 1984 and has been celebrated annually since 1985.

• His teachings continue to inspire millions of people worldwide, especially the youth, to strive for excellence and self-improvement.

Q81. Answer: (c) Renal artery

The correct answer is Renal artery

Key Points

• The Renal artery is responsible for carrying blood from the heart to the kidneys.

• The renal arteries branch off from the abdominal aorta and supply the kidneys with blood.

• Each kidney receives blood through its own renal artery, ensuring a sufficient supply of oxygenated blood for filtration and other kidney functions.

• The renal arteries play a crucial role in maintaining kidney health and overall bodily function by providing the necessary nutrients and oxygen.

Additional Information

• The Vena cava is a large vein that carries deoxygenated blood from the body back to the heart.

• The Renal vein carries filtered blood away from the kidneys back to the heart.

• The Coronary artery supplies blood to the heart muscles.

• The kidneys filter about 120 to 150 quarts of blood daily, producing 1 to 2 quarts of urine.

• Proper function of the renal arteries is essential for effective kidney filtration and overall homeostasis.

Q82. Answer: (c) 4

The logic followed here is:

(3 + 5 + 2 + 4) = (2 × 7)

14 = 14 (LHS = RHS)

And,

(7 + 2 + 1 + 5) = (3 × 5)

15 = 15 (LHS = RHS)

Similarly,

(6 + 4 + 1 + 1) = (? × 3)

12 ÷ 3 = ?

4 = ?

Hence, "Option 3" is the correct answer.

Q83. Answer: (c) 30

Given:

a × b = a + b + (√(a/b)) + √(ab)

Formula used:

a × b = a + b + (√(a/b)) + √(ab)

Calculation:

Let a = 16 and b = 4.

=> 16 + 4 + √(16/4) + √(16×4)

=> 16 + 4 + √4 + √64

=> 16 + 4 + 2 + 8

=> 30

Therefore The value of 16 × 4 is 30.

Q84. Answer: (a) 100 million K

The correct answer is 100 million K

Key Points

• 100 million K is the approximate temperature required for nuclear fusion.

• Nuclear fusion is the process of combining two or more light nuclei to form a heavier nucleus, releasing a significant amount of energy.

• This process powers the sun and other stars, where the core temperature reaches millions of degrees.

• The high temperature is necessary to overcome the electrostatic repulsion between the positively charged nuclei.

Additional Information

• Nuclear fusion is considered a potential source of almost limitless and clean energy.

• Unlike nuclear fission, fusion produces less radioactive waste and carries a lower risk of nuclear accidents.

• Current research in nuclear fusion includes projects like ITER (International Thermonuclear Experimental Reactor) aiming to make fusion a viable energy source.

• Fusion reactions typically involve isotopes of hydrogen, such as deuterium and tritium.

Q85. Answer: (a) American football

The logic followed here is:

American football	Not a type of ball
Cricket ball	Type of ball
Golf ball	Type of ball
Tennis ball	Type of ball

Cricket ball, Golf ball, Tennis ball all are types of balls used in different sports,

Whereas,

American football is not a type of ball itself, but rather a sport that uses a football.

Hence, the correct answer is "American football".

Q86. Answer: (a) 14%

Given:

A table showing production of mangoes (in tons) of three different states A, B, C over the years 2016 to 2019.

Formula Used:

Percentage increase = (2019 production of A - 2017 production of A) / 2017 production of A × 100.

Calculation:

Percentage increase = (4.8 -4.2) / 4.2 × 100

=> 1 /7 × 100

≈ 14%

Therefore The correct answer is 14%.

Q87. Answer: (b) 38%

Given:

A table showing the number of candidates who appeared and qualified in an entrance examination from different states over the years.

Formula used:

Percentage of A with respect to B = A / B × 100.

Calculation:

Combining the states D and E together in 2016.

The number of candidates qualified = 700 + 490 =1190.

The number of the candidates appeared = 1600 + 1500 =3100.

Required Percentage = 1190 / 3100 × 100

≈ 38%

Therefore The correct answer is 38%.

Q88. Answer: (b) 625

Given:

A bar graph showing the number of students (in hundreds) graduated from 4 different departments of a university A, B, C and D during 3 consecutive years.

Formula used:

Average = Total number students for 2017 / Number of departments

Calculation:

Total number students for 2017 = 7.5 + 8.5 + 3.8 + 5.2 (in hundreds).

=> 2500

Number of departments = 4

Average = 2500 / 4 = 625.

Therefore The correct answer is 625.

Q89. Answer: (b) 133%

Given:

A pie chart showing the monthly expenditure incurred by a family over different items.

Formula used:

Required percentage = education / rent × 100

Calculation:

Required percentage = 20 / 15 × 100

=> 4 / 3 × 100

=> 133%

Therefore The correct answer is 133%.

Q90. Answer: (c) Patient

The logic followed here is:

Midwife	Healthcare professional
Nurse	Healthcare professional
Patient	Receiver of healthcare
Doctor	Healthcare professional

Midwife, Nurse, Doctor all are Synonyms of Healthcare professional,

Whereas,

Patient is the Antonym as it is the Receiver of healthcare.

Hence, the correct answer is "Patient".

Q91. Answer: (b) 48

The logic followed here is:

Logic: Sum of the place value of the alphabets = Code

'ALCOHOL' is written as '66'

=> 1 + 12 + 3 + 15 + 8 + 15 + 12 = 66

Similarly, for 'JUICE'

=> 10 + 21 + 9 + 3 + 5 = 48.

So, 'JUICE' will be written as '48'.

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Hence, the correct answer is "Option 2".

Q92. Answer: (b) 23

The logic followed here is:

Hence, "Option 2" is the correct answer.

Q93. Answer: (b) 8, 5

Given:

The difference between the squares of two numbers is 39.

The sum of the two numbers is 13.

Formula used:

Let the two numbers be a and b.

$a^2 - b^2 = 39$ (difference of squares).

a + b = 13

We use the identity a2 - b2 = (a + b)(a - b)

Calculations:

Using the identity:

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

=> 39 = (13)(a - b)

Solve for (a - b):

a - b = 39/13 = 3

Now, solve the system of equations:

a + b = 13

a - b = 3

Add the two equations:

(a + b) + (a - b) = 13 + 3

=> 2a = 16

=> a = 8

Substitute a = 8 into a + b = 13:

=> 8 + b = 13

=> b = 13 - 8 = 5

Therefore The two numbers are 8 and 5.

Q94. Answer: (a) Fat : Nutrient

The logic followed here is:

Logic: Category and Member of Category.

Here,

Falcon : Bird → Falcon is a member of the category Bird.

Similarly,

Fat : Nutrient → Fat is a member of the category Nutrient.

Hence, the correct answer is "Option 1".

Q95. Answer: (b) 15267229

The logic followed here is:

L is written as 15

And,

T is written as 7

Similarly,

LATER will be written as

Hence, "Option 2" is the correct answer.

Q96. Answer: (a) [figure]

The Venn diagram that best represents the relationship between Moon, Satellite, and Celestial body is shown below :

A satellite is a subset of a celestial body because all satellites (natural and artificial) are celestial bodies.

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The moon is a subset of a satellite because the moon is Earth's natural satellite.
Hence, "Option 1" is the correct answer.

Q97. Answer: (a) Mother

Given:
1) Einstein is Curie's father and Martha's husband.
2) Raman is Curie's brother.
3) Hawkins is Raman's sister's husband.
4) Martha has two children and two nephews.
Thus, Martha is the mother of Hawkins's wife Curie.
Hence, the correct answer is "Option 1.

Q98. Answer: (b) [figure] [figure]

The diagram that best represents the relationship between Dentist, Woman, and Good dentist is shown below :
Some women are dentists.
Some dentists can be good and some not good.
Some women can be good dentists too.
Hence, "Option 2" is the correct answer.

Q99. Answer: (c) 12P8

The logic followed here is:
Thus, it should be '15S9' instead of '12P8'
Hence, "Option 3" is the correct answer.

Q100. Answer: (b) [figure]

The diagram that best represents the relationship between Yellow, Sun, and Color is shown below :
Yellow is a subset of color.
Sun is not associated with color.
Hence, "Option 2" is the correct answer.

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