RRB NTPC CBT-I Official Paper (Held On: 27 Feb 2021 Shift 2) (Previous Year Paper)

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

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Q1. Which of the following policy adoptions by the Government of India is NOT guided by the 'Directive Principles of State Policy?

(a) Promotion of village panchayats
(b) Preparation of building by-laws
(c) Uniform civil code
(d) Prohibition of consumption of alcoholic liquor

Q2. Out of the four numbers listed, three are alike in some manner and one is different. Select the odd one.

2126, 9819, 7568, 8423

(a) 7568
(b) 8423
(c) 2126
(d) 9819

Q3. If a : 3 = b : 7 = c : 9, then (a + b + c)/a =?

(a) 1/9
(b) 1/3
(c) 3/19
(d) 19/3

Q4. What is the exterior angle of a regular 15-sided polygon?

(a) 204°
(b) 24°
(c) 124°
(d) 20°

Q5. Consider the following two events and select the correct option.

Event A: Yamuna dam project came to a halt.

Event B: Yamuna dam project was crucial for the city's development.

(a) Event B is the principal and immediate cause and A is its effect.
(b) Event A is the effect but Event B is not its immediate and principal cause.
(c) Event A is the principal and immediate cause and B is its effect.
(d) Event A and B are effects of independent causes.

Q6. Who is appointed as the new managing director of LIC in January, 2021?

(a) Rajiv Lochan
(b) Sandeep Aggarwal
(c) Soma Mondal
(d) Siddhartha Mohanty

Q7. In which soil does cotton grow best?

(a) Brown soil
(b) Red soil
(c) Black soil
(d) Yellow soil

Q8. Which of the following is NOT a tributary of the Indus River?

(a) Chenab
(b) Gomti
(c) Ravi
(d) Beas

Q9. An air jet covers a certain distance at a speed of 144 km/h in 5 hours. To cover the same distance in 2 hours, what is the required speed of the air jet?

(a) 360 km/hr
(b) 365 km/hr
(c) 350 km/hr
(d) 370 km/hr

Q10. The value of sin 15° sin 30° sin 75° is:

(a) 1/2√2
(b) 1/8
(c) 3/2
(d) 1/4

Q11. Which of the following phyla of animals have jointed legs?

(a) Arthropod
(b) Echinodermata
(c) Annelida
(d) Nematode

Q12. Which action did the Civil Disobedience Movement start?

(a) Arrest of Jawaharlal Nehru and Abdul Ghaffar Khan
(b) Dandi March
(c) Execution of Bhagat Singh
(d) Chauri-Chaura incident

Q13. What is the common name of E300?

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

Q14. The L.C.M. of 2/3, 3/4, 4/5, 9/11 is:

(a) 27
(b) 45
(c) 36
(d) 55

Q15. Article 43 B in Part IV of the Constitution of India deals with:

(a) Village panchayats
(b) Cooperative societies
(c) Rural business hubs
(d) Forest development

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Q16. Which organisation was formed by Henry Dunant, the winner of the first Nobel Peace Prize in 1901?

(a) Organisation for the Prohibition of Chemical Weapons
(b) World Wide Fund for Nature
(c) International Red Cross
(d) Medecins Sans Frontieres

Q17. 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:

A. Some clothes are poems.

B. Poem is a tree.

Conclusions:

A. Poem is not a tree.

B. Some poems are clothes.

(a) Neither A nor B follows.
(b) Both A and B follow.
(c) Only conclusions A follows.
(d) Only conclusions B follows.

Q18. Which of the following is NOT an Indian research base at Antarctica?

(a) Dakshin Yamunotri
(b) Dakshin Gangotri
(c) Maitri
(d) Bharati

Q19. Which honour did Gandhiji return in protest of the Jallianwala Bagh massacre?

(a) Noor-i-Hind
(b) Kaiser-i-Hind
(c) Jewel of the Commonwealth
(d) Sher-i-Hind

Q20. Which of the following is NOT an internal part of the computer?

(a) Flash drive
(b) RAM
(c) Video card
(d) Motherboard

Q21. Which is the greatest fraction among the following:

13/16, 17/24, 5/12, 7/8

(a) 5/12
(b) 13/16
(c) 17/24
(d) 7/8

Q22. Find the value of x.

$6(8x + 25) - 70 = 5(8x + 25)$

(a) $x = 515/8$
(b) $x = 5/8$
(c) $x = 55/7$
(d) $x = 55/8$

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Q23. Which of the following is NOT a correct pair of a UN organ and its headquarters?

(a) United Nations Educational, Scientific and Cultural Organization (UNESCO) - Paris
(b) The International Court of Justice (ICJ) - The Hague
(c) International Atomic Energy Agency (IAEA) - Vienna
(d) World Health Organization (WHO) - New York

Q24. Which of the following is NOT a function of the Reserve Bank of India (RBI)?

(a) Banker to the government
(b) Banker to the public
(c) Bank of currency issue
(d) Lender of the last resort

Q25. Urdu is also referred to as:

(a) Shauraseni
(b) Farsi
(c) Awadhi
(d) Lashkari Zaban

Q26. Select the option that is related to the third number in the same way as the second number is related to the first number.

18 : 35 :: 12 : ?

(a) 23
(b) 38
(c) 21
(d) 30

Q27. Manipuri classical dance form often depicts scenes from the life of God _____.

(a) Shiva
(b) Krishna
(c) Vishnu
(d) Ram

Q28. Which of the following sets of chromosomes lead to the birth of a girl child?

(a) YY
(b) XX
(c) XY
(d) XZ

Q29. The difference between two numbers is 35% of the larger number. If the smaller number is 195, then the larger number is:

(a) 330
(b) 320
(c) 300
(d) 350

Q30. If $0.17 \div p^2 = 17$, then the value of p is:

(a) 1
(b) 0.01
(c) 0.001
(d) 0.1

Q31. A train covers a distance of 12 km in 25 minutes. If its speed is decreased by 5 km/hr, then the time (in minutes) taken by it to cover the same distance will be:

(a) 3031/119
(b) 3030/119

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(c) 3032/119
(d) 303/119

Q32. Which type of mirrors are commonly used in torches, searchlights and vehicle headlights to get powerful parallel beams of light?
(a) Convex
(b) Cylindrical
(c) Bifocal
(d) Concave

Q33. Which of the following is a copper ore?
(a) Chromite
(b) Malachite
(c) Haematite
(d) Magnetite

Q34. Operating system of a computer is an example of:
(a) System software
(b) Application platform
(c) Hardware
(d) Application software

Q35. With which substance does silver react and turn black?
(a) Magnesium
(b) Zinc
(c) Sulphur
(d) Carbon

Q36. A and B together can finish a task in 12 days. B and C together can finish it in 18 days. If A is three times more efficient than C, then in what time B alone would finish the same task?
(a) 24 days
(b) 22 days
(c) 25 days
(d) 20 days

Q37. If $x + y + z = 0$, then the value of $(x^2)/yz + (y^2)/zx + (z^2)/xy$ is:
(a) 1
(b) 3
(c) 4
(d) 2

Q38. After the signing of which treaty did the European Community come to be known as the European Union?
(a) The Treaty of Lisbon, 2007
(b) The Single European Act, 1986
(c) The Treaty of Maastricht, 1992
(d) The Treaty of Amsterdam, 1997

Q39. If $\sqrt{2116} = 46$ then find the value of
$\sqrt{21.16} + \sqrt{0.2116} + \sqrt{0.002116} + \sqrt{0.00002116}$
(a) 5.1116
(b) 5.0016
(c) 5.1106
(d) 5.0006

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Q40. Who was the head of the committee of the Draft National Education Policy (NEP) 2019?

(a) Shakila T Shamsu
(b) MK Sridhar
(c) Vasudha Kamat
(d) K Kasturirangan

Q41. What is the value of the following expression:

(1 + x) (1 + x²) (1 + x^4) (1 + x^8) (1 - x)

(a) (1 - x)^4
(b) (1 + x^(16))
(c) (1 - x)^8
(d) (1 - x^(16))

Q42. If the selling price is doubled, the profit becomes three times the original. Find the new profit percentage.

(a) 300%
(b) 100%
(c) 150%
(d) 200%

Q43. A circle, made of wire, of diameter 49 cm is formed into a rectangle whose sides are in the ratio 7 : 4. Find the area of the rectangle. [Take π = 22/7]

(a) 1350 sq cm
(b) 1372 sq cm
(c) 1402 sq cm
(d) 1312 sq cm

Q44. Find the value of

1/(2×4) + 1/(4×6) + 1/(6×8) + ··· ··· + 1/(48×50) :

(a) 0.42
(b) 0.46
(c) 0.48
(d) 0.24

Q45. Which of the following is NOT a correct pair of a country and its capital?

(a) Bahamas – Nassau
(b) Libya – Tripoli
(c) Kazakhstan – Bishkek
(d) Belgium – Brussels

Q46. Select the number that can replace the question mark (?) in the following series.

6, 13, 41, 167, ?

(a) 839
(b) 835
(c) 320
(d) 750

Q47. A, B, C, D, E, F, H and I are the names of the boys whose favourite sports are P, Q, R, S, T, U, V and W, but not necessarily in that order. Each boy has only one favourite sport. The favourite sport of D is S. D and F do not like sports P and W. A, C, E and H do not like sports U, P, W and S. B does not like sport W. What is the favourite sport of I?

(a) T
(b) U
(c) R
(d) W

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Q48. If a = 2b = 3c and a + b + c = 121 then √(a² + b² + c²) is:

(a) 72
(b) 77
(c) 73
(d) 75

Q49. Read the given information carefully and answer the question that follows.

• There are four persons: P, Q, R and S.
• One of them is a doctor and plays football and cricket.
• P and Q are teachers.
• P plays badminton.
• The lawyer and both the teachers are swimmers.
• One of them also plays tennis.
• S plays carrom and is a lawyer.
• All the four persons play two games each and follow one profession.

Who plays carrom and is a swimmer?

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

Q50. If cos x - 3sin x = √3 sin x, then the value of tan x is:

(a) (3 - √3)/6
(b) 3 - √3
(c) 3 + √3
(d) √3

Q51. An amount of Rs. 50 is divided among A, B and C such that A gets Rs. 5 more than B and B gets Rs. 9 more than C. What is the ratio of their shares?

(a) 23 : 14 : 13
(b) 23 : 18 : 9
(c) 13 : 24 : 13
(d) 14 : 23 : 14

Q52. Select the option that can replace the question mark (?) in the following series.

16S8, 33M12, 50G18, 67A26, ?

(a) 62B36
(b) 84A36
(c) 84U36
(d) 84U24

Q53. Under which Viceroy was the Permanent Settlement of Bengal in 1793 introduced?

(a) Charles Cornwallis
(b) John Shore
(c) Lord Dalhousie
(d) Phillip Francis

Q54. Pradhan Mantri Urja Ganga project of Eastern India is related to:

(a) Electricity transmission line for eastern India
(b) Ganga cleaning project for Eastern India
(c) Crude oil pipeline
(d) Natural gas pipeline

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Q55. Pradhan Mantri Mudra Yojana is for:

(a) Provision of money for only BPL families
(b) Printing of new currency after demonetisation
(c) Provision of funding to non-corporate small business sector
(d) Provision for foreign currency loans

Q56. Who is called the 'Father of Communal Electorate' in India?

(a) Lord Minto
(b) Lord Hardinge
(c) Lord Curzon
(d) Lord Morley

Q57. Consider the following two events and select the correct option.

Event A: Meghna is going to get a prize and a medal today.

Event B: Meghna won the race competition today.

(a) Event A is the effect but Event B is not its immediate and principal cause.
(b) Event B is the principal and immediate cause and A is its effect.
(c) Event A and B are effects of independent causes.
(d) Event A is the principal and immediate cause and B is its effect.

Q58. Which of the following architectural techniques has been used primarily to decorate the Taj Mahal?

(a) Pietra dura
(b) Tesserae
(c) Mosaic
(d) Relief

Q59. X is 6 times as large as Y. By what percentage is Y lesser than X?

(a) 831/3%
(b) 832/3%
(c) 81/3%
(d) 833/3%

Q60. Which is the largest river by volume in the world?

(a) Amazon
(b) Nile
(c) Indus
(d) Hwang Ho

Q61. Prasad ranked eleventh from the top and twenty fourth from the bottom among those who had passed in the mid-term examination in a class. If four students had failed in the mid-term examination, what was the total number of students in that class?

(a) 37
(b) 35
(c) 36
(d) 38

Q62. A wheel makes 1000 revolutions in covering a distance of 154 km. Find the radius (in metre) of the wheel.

(a) 41/2
(b) 241/2
(c) 241/3
(d) 251/2

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Q63. Q is the daughter of L whose only sister M is the daughter-in-law of O. The only son of O has three daughters P, R and S. How is S related to L?

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

Q64. The greatest value of sin x + cos x is:

(a) 1/4
(b) 1/(√2)
(c) 1
(d) √2

Q65. Select the option that will fill in the blank and complete the given series.

B8E, G27J, L64O, _____

(a) P125T
(b) P121S
(c) Q125T
(d) Q121S

Q66. Who among the following started the newspaper, 'Sambad Kaumudi'?

(a) Raja Ram Mohan Roy
(b) Ishwar Chandra Vidyasagar
(c) Rash Bihari Bose
(d) Sisir Kumar Ghosh

Q67. What would be the highest value of X in the given equation:

1X9 + 1Y7 + 2Z8 = 424

(a) 2
(b) 0
(c) 1
(d) 7

Q68. A vendor bought 12 items for a rupee. How many for a rupee should he sell to gain 20%?

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

Q69. Six bells commence tolling together and toll at the intervals of 2, 4, 6, 8, 10 and 12 seconds respectively. In the first 10 minutes, how many times would they have tolled together?

(a) 4 times
(b) 5 times
(c) 6 times
(d) 2 times

Q70. The ratio between the sale price and the cost price of an article is 7 : 4. What is the ratio between the profit and the cost price of the article?

(a) 4 : 5
(b) 3 : 4
(c) 2 : 5
(d) 5 : 6

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Q71. British Prime Minister Winston Churchill received a Nobel Prize for:

(a) Economics
(b) Literature
(c) Physiology
(d) Peace

Q72. Which of the following could be a description of the term 'Financial Inclusion'?

(a) Delivery of financial services at affordable cost to the poor
(b) Use of mobile phone for financial transactions
(c) Facility of transfer of money free of cost
(d) Implementation of 'Know Your Customer' norm

Q73. Of the six cities, Aliganj is bigger than Sewa Nagar. Hari Nagar is bigger than Nand Nagri. Jaitpur is smaller than Hari Nagar but bigger than Sewa Nagar. Sewa Nagar is smaller than Nand Nagri but bigger than Rampur. Which is the smallest city?

(a) Jaitpur
(b) Sewa Nagar
(c) Rampur
(d) Nand Nagri

Q74. Who among the following was the first Chinese Citizen to win Nobel Peace Prize?

(a) Yu Jie
(b) Wang Dan
(c) Liu Xia
(d) Liu Xiaobo

Q75. The Ministry of Agriculture and Farmer's Welfare of India has declared a day of every year as 'National Women's Farmer's Day' on:

(a) 30 January
(b) 15 October
(c) 8 March
(d) 24 October

Q76. Select the option that is related to the fourth number in the same way as the first number is related to the second number.

12 : 72 :: ? : 98

(a) 19
(b) 28
(c) 17
(d) 14

Q77. Which one of the following numbers is NOT a prime number?

(a) 313
(b) 231
(c) 241
(d) 211

Q78. Out of the four organs listed, three are alike in some manner and one is different. Select the odd one.

(a) Liver
(b) Stomach
(c) Large Intestine
(d) Kidney

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Q79. Calculate the mean for the following data:

8.2, 9.5, 10.3, 11.4, 12.4

(a) 10.36
(b) 10.7
(c) 10
(d) 10.51

Q80. Which of the following pairs of thermal power plants and their locations is NOT correct?

(a) Neyveli – Tamil Nadu
(b) Panki – Uttar Pradesh
(c) Korba – Chhattisgarh
(d) Talcher – Assam

Q81. Which of the following is NOT an internet browser?

(a) Safari
(b) Firefox
(c) Chrome
(d) Panda

Q82. The values of mode and mean are 12.5 and 15.2, respectively, in a moderately asymmetrical distribution. Find the median of the distribution.

(a) 14.9
(b) 14.3
(c) 14.5
(d) 14.0

Q83. As of December 2020, how many fundamental duties are enumerated in the Constitution of India?

(a) 9
(b) 11
(c) 7
(d) 8

Q84. India's first indigenous satellite launch vehicle is:

(a) SLV–3
(b) ASLV
(c) GSLV
(d) PSLV

Q85. Chandrayaan–1, India's first spacecraft mission to the moon, was successfully launched by:

(a) PSLV–C11
(b) GSLV
(c) GSLV MkIII
(d) RLV–TD

Q86. In a certain code language, 'WGHLTY' is written as 'TOGCBR'. Which of the options given below will be the code for 'TGDBHM' in that code language?

(a) HCWZBK
(b) HBWZKO
(c) HCVZAR
(d) HCWYBO

Q87. Read the given statement and courses carefully and decide which of the courses of action logically follow(s) from the statements.

Statement:

Many cases of children's death are reported from AES (Acute encephalitis Syndrome) in Muzaffarpur district of Bihar.

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Courses of Action:

I. The question should be raised in legislative assembly and health minister's resignation should be demanded with immediate effect.

II. A team of doctors should be rushed to the affected areas.

(a) Neither (I) and (II) follows.
(b) Only (II) follows.
(c) Either (I) or (II) follows.
(d) Only (I) follows.

Q88. Select the letter-cluster that can replace the question mark (?) in the following series.

MOM, QSQ, UWU, ?

(a) YAY
(b) YZA
(c) VXV
(d) YZY

Q89. Animal is related to Zoology in the same way as Disease is related to:

(a) Astrology
(b) Cardiology
(c) Pathology
(d) Botany

Q90. In a certain code language, 5273 is written as 3455. How will 9567 be written as in that language?

(a) 7974
(b) 7749
(c) 7794
(d) 7947

Q91. In a row of students of a class, Raj is 16^(th) from either end. How many students are there in the row?

(a) 32
(b) 31
(c) 30
(d) 16

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

18, 19, 22, 31, 58, ?

(a) 128
(b) 139
(c) 141
(d) 132

Q93. Select the option that is related to the third term in the same way as the second term is related to the first term.

Beauty : See :: Melody : ?

(a) Sense
(b) Hear
(c) Touch
(d) Feel

Q94. What is related to 'Furniture' in the same way as 'Building' is related to 'Mason'?

(a) Contractor
(b) Designer
(c) Carpenter
(d) Wood

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Q95. In a certain code language, INDUS is written as TOYHJ. How will GANGA be written as in that language?

(a) TZMTZ
(b) BOVBV
(c) VBOVB
(d) MZTZM

Q96. Read the given information carefully and answer the following questions.

Five coaching classes - P, Q, R, S and T, are located on five different floors 1, 2, 3, 4 and 5, but not necessarily in the same order. Each coaching class teaches only one subject among Physics, Chemistry, Mathematics, Biology and English, but not necessarily in the same order. The following information is also known:

Biology subject is taught in coaching class S, while English subject is not taught in coaching class Q.

Coaching class R is on the third floor, and Chemistry subject is taught in coaching class P.

Physics subject is taught in the coaching class located on the fifth floor.

English or Physics subject is not taught in the coaching class located on the third floor.

On the basis of the given information, tell on which floor Mathematics subject is taught?

(a) Third
(b) Second
(c) Fourth
(d) Fifth

Q97. Q is the paternal uncle of R and N is R's father. N's father O has two children. R's mother L has two sisters X and Y. How is Q related to L?

(a) Father's Brother
(b) Husband's Brother
(c) Husband's Father
(d) Brother's Wife

Q98. Out of the four words listed, three are alike in some manner and one is different. Select the odd one.

(a) Printer
(b) Keyboard
(c) Intel
(d) Motherboard

Q99. Select the option that is different from the rest.

(a) 583
(b) 427
(c) 275
(d) 671

Q100. In a certain code language, 'PICKLE' is written as 'KRXPOV'. How will 'TURNIP' be written as in that language?

(a) GFIMRK
(b) FHELQJ
(c) GFMRIK
(d) FEHLQJ

ANSWER KEY

1	b	2	b	3	d	4	b	5	b	6	d	7	c	8	b	9	a	10	b
11	a	12	b	13	b	14	c	15	b	16	c	17	d	18	a	19	b	20	a
21	d	22	d	23	d	24	b	25	d	26	a	27	b	28	b	29	c	30	d
31	b	32	d	33	b	34	a	35	c	36	a	37	b	38	c	39	c	40	d
41	d	42	a	43	b	44	d	45	c	46	a	47	d	48	b	49	c	50	a

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51	b	52	c	53	a	54	d	55	c	56	a	57	b	58	a	59	a	60	a
61	d	62	b	63	a	64	d	65	c	66	a	67	b	68	b	69	c	70	b
71	b	72	a	73	c	74	d	75	b	76	d	77	b	78	d	79	a	80	d
81	d	82	b	83	b	84	a	85	a	86	d	87	b	88	a	89	c	90	b
91	b	92	b	93	b	94	c	95	c	96	a	97	b	98	c	99	b	100	a

SOLUTIONS

Q1. Answer: (b) Preparation of building by-laws

The correct answer is Preparation of building by-laws.

Key Points

• The Directive Principles of State Policy are guidelines to the central and state governments of India, to be kept in mind while framing laws and policies.

• Promotion of village panchayats is guided by the Directive Principles, aiming at decentralization of power and democratic governance at the grassroots level.

• Uniform civil code is mentioned under Article 44 of the Directive Principles, promoting a uniform legal framework for all citizens irrespective of religion.

• Prohibition of consumption of alcoholic liquor is guided by Article 47, aiming at improving public health and nutrition levels.

Additional Information

• Directive Principles of State Policy

• These are a set of guidelines or principles given to the governing body of a country for establishing a just society.

• They are non-justiciable, meaning their implementation cannot be enforced by the courts.

• They are enumerated in Part IV of the Constitution of India from Article 36 to Article 51.

• They aim to create social and economic conditions under which citizens can lead a good life.

• Promotion of village panchayats

• This is mentioned under Article 40 of the Directive Principles.

• It aims at organizing village panchayats and endowing them with the necessary powers and authority to enable them to function as units of self-government.

• Uniform Civil Code (UCC)

• Article 44 of the Constitution of India directs the state to secure a Uniform Civil Code for the citizens throughout the territory of India.

• The goal is to replace personal laws based on the scriptures and customs of each major religious community in India with a common set governing every citizen.

• Prohibition of consumption of alcoholic liquor

• Article 47 of the Directive Principles emphasizes the state's duty to improve public health by prohibiting the consumption of intoxicating drinks and drugs.

• The idea is to raise the level of nutrition and the standard of living and to improve public health.

• Building By-laws

• Building by-laws are a set of standards and regulations set by the local government to control and regulate the construction of buildings.

• They ensure that constructions are safe, healthy, and in accordance with the urban planning norms.

• They typically include regulations on building height, floor area ratio, setbacks, and other construction norms.

• Building by-laws are not specifically mentioned in the Directive Principles of State Policy.

Q2. Answer: (b) 8423

Then logic followed here is:

Logic: Product of the first and last digit of each number should equal the middle two digits.

For, 2126 → 2 × 6 = 12

For, 9819 → 9 × 9 = 81

For, 7568 → 7 × 8 = 56

For, 8423 → 8 × 3 = 24 ≠ 42

So, 8423 is odd from the given option.

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Hence, the correct answer is "Option 2".

Q3. Answer: (d) 19/3

Given:

a : 3 = b : 7 = c : 9

Formula Used:

Expressing the ratios in terms of a common variable k:

a = 3k

b = 7k

c = 9k

Calculation:

(a + b + c)/a

Substitute a = 3k, b = 7k, and c = 9k :

=> (3k + 7k + 9k)/3k

=> 19k/3k

=> 19/3

The correct answer is option 4.

Q4. Answer: (b) 24°

Given:

Number of sides of the polygon (n) = 15

Formula Used:

Exterior angle of a regular polygon = 360º / n

Calculation:

Exterior angle = 360º / 15

=> Exterior angle = 24º

The exterior angle of a regular 15-sided polygon is 24º.

Q5. Answer: (b) Event A is the effect but Event B is not its immediate and principal cause.

Statements:

I. Yamuna dam project came to a halt.

Statement I is the effect of some potential factors or issues affecting the progress of the Yamuna dam project, such as funding issues, environmental concerns, or administrative challenges.

II. Yamuna dam project was crucial for the city's development.

Statement II highlights the importance of the Yamuna dam project for the city's development. This significance might stem from its potential benefits like water supply, power generation, or flood control, which are essential for the city's growth.

Therefore, Event A is the effect but Event B is not its immediate and principal cause. Statement I reflects the current status of the project, while Statement II describes the project's significance without directly causing its halt.

Hence, the correct answer is "Option 2".

Q6. Answer: (d) Siddhartha Mohanty

The correct answer is Siddhartha Mohanty.

Key Points

• Siddhartha Mohanty was appointed as the new managing director of LIC in January 2021.

• He took over from T.C. Suseel Kumar who retired from the position.

• Siddhartha Mohanty has been with LIC for over three decades, holding various important positions.

• Prior to being appointed as Managing Director, he served as the Chief Executive Officer of LIC Housing Finance.

Additional Information

• Life Insurance Corporation of India (LIC)

• LIC is an Indian state-owned insurance group and investment corporation.

• It was founded in 1956 when the Parliament of India passed the Life Insurance of India Act that nationalized the insurance industry in India.

• Over the years, LIC has grown to become the largest insurance company in India.

• LIC offers a wide range of insurance products and services to cater to various needs of its customers.

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• LIC Housing Finance

• LIC Housing Finance is one of the largest Housing Finance companies in India.

• It was incorporated on June 19, 1989, under the Companies Act, 1956.

• The company provides long-term finance to individuals for the purchase or construction of houses or flats for residential purposes.

• LIC Housing Finance also provides finance on existing property for business or personal needs and gives loans to professionals for the purchase or construction of clinics, nursing homes, diagnostic centers, office space, etc.

• Roles and Responsibilities of a Managing Director

• The Managing Director (MD) is responsible for the overall performance of the company.They ensure the company's strategy is aligned with its goals and objectives.

• The MD oversees the execution of business strategies and plans to meet the company's goals.

• They also represent the company in various forums and ensure compliance with regulatory requirements.

Q7. Answer: (c) Black soil

The correct answer is Black soil.

Key Points

• Black soil is also known as Regur soil and is ideal for growing cotton.

• It is rich in calcium carbonate, magnesium, potash, and lime, which are essential nutrients for cotton growth.

• Black soil has a high moisture-retaining capacity, making it suitable for cotton farming.

• This soil is predominantly found in the Deccan Plateau region, covering parts of Maharashtra, Madhya Pradesh, Gujarat, Andhra Pradesh, and Tamil Nadu.

Additional Information

• Brown Soil

• Brown soil is a type of loam soil that is typically fertile and suitable for growing various crops.

• It is well-draining and rich in organic matter but not particularly suitable for cotton cultivation.

• Red Soil

• Red soil is rich in iron oxide which gives it a reddish color.

• It is commonly found in parts of Tamil Nadu, Karnataka, and Andhra Pradesh but is less suitable for cotton due to its lower nutrient content and poor moisture retention.

• Yellow Soil

• Yellow soil is formed by the weathering of ancient crystalline rocks and is found in parts of Orissa and Chhattisgarh.

• It is less fertile compared to black soil and not ideal for cotton cultivation.

Q8. Answer: (b) Gomti

The correct answer is Gomti.

Key Points

• The Gomti River is a tributary of the Ganges River, not the Indus River.

• The Gomti River originates from Gomat Taal (Fulhar Jheel) near Madho Tanda, Pilibhit in Uttar Pradesh, India.

• The major cities along the Gomti River include Lucknow, which is the capital of Uttar Pradesh.

• The river has religious significance and is mentioned in Hindu scriptures as the daughter of Sage Vashishta.

Additional Information

• Indus River

• The Indus River is one of the longest rivers in the world, flowing through China (Tibet), India, and Pakistan.

• It originates from the Tibetan Plateau in the vicinity of Lake Mansarovar.

• Major tributaries of the Indus River include the Jhelum, Chenab, Ravi, Beas, and Sutlej rivers.

• The river is crucial for the economy of Pakistan, providing water resources for agriculture and hydroelectric power generation.

• Chenab River

• The Chenab River is a major river that flows in India and Pakistan.

• It is formed by the confluence of the Chandra and Bhaga rivers in the Lahaul and Spiti district in the Indian state of Himachal Pradesh.

• The river flows through the Jammu region of Jammu and Kashmir, and then into Punjab, Pakistan.

• Ravi River

• The Ravi River is one of the five rivers of the Punjab region in northwestern India and eastern Pakistan.

• It originates in the Himalayas in the Indian state of Himachal Pradesh and flows along the Indo-Pak border for some distance before entering Pakistan.

• Beas River

• The Beas River is another important river in northern India.

• It originates in the Himalayas in central Himachal Pradesh, India, and flows for some 470 kilometers to the Sutlej River in the Indian state of Punjab.

Q9. Answer: (a) 360 km/hr

Given:

Speed of the air jet = 144 km/h

Time taken = 5 hours

Formula Used:

Distance = Speed × Time

Required Speed = Distance / Time

Calculation:

Distance = 144 km/h × 5 hours

Distance = 720 km

Required Speed = 720 km / 2 hours

=> Required Speed = 360 km/h

The correct answer is option 1 (360 km/h).

Q10. Answer: (b) 1/8

Shortcut Trick

Convert sin 75° to cos 15° using complementary angles: sin 75° = cos (90° − 75°) = cos 15°.

Substitute sin 30° = 1/2 into the expression: (1/2) × sin 15° × cos 15°.

Apply the double angle identity: sin θ cos θ = (1/2) sin 2θ.

Expression = 1/2 × [1/2 × sin (2 × 15°)] = 1/4 × sin 30° = 1/4 × 1/2 = 1/8.

Therefore The correct answer is 1/8.

Alternate Method

Given: sin 15° sin 30° sin 75°

Formula Used:

1. sin 30° = 1/2

2. sin (90° − θ) = cos θ

3. 2 sin θ cos θ = sin 2θ

Calculations:

=> Expression = sin 15° × (1/2) × sin 75°

=> Expression = 1/2 × sin 15° × cos (90° − 75°)

=> Expression = 1/2 × sin 15° × cos 15°

=> Multiply and divide by 2: (1/4) × (2 sin 15° cos 15°)

=> Using 2 sin θ cos θ = sin 2θ: (1/4) × sin (2 × 15°)

=> Expression = 1/4 × sin 30°

=> Expression = 1/4 × 1/2 = 1/8

Therefore The correct answer is 1/8.

Additional Information

Complementary Trigonometric Ratios

For any angle θ, sin (90° − θ) = cos θ and cos (90° − θ) = sin θ.

Double Angle Identity

The sine double angle formula is sin 2θ = 2 sin θ cos θ.

Product-to-Sum Formula

The product of two sines can be expressed as: sin A sin B = 1/2 [cos(A − B) − cos(A + B)].

Specific Trigonometric Values

sin 15° = (√3 − 1) / (2√2) and sin 75° = (√3 + 1) / (2√2).

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Q11. Answer: (a) Arthropod

The correct answer is Arthropod.

Key Points

• Arthropods are a phylum of invertebrate animals having an exoskeleton, a segmented body, and jointed appendages.

• The phylum Arthropoda includes insects, arachnids, myriapods, and crustaceans.

• Arthropods are characterized by their jointed legs, which enable them to have greater mobility and adaptability in various environments.

• They are the largest phylum in the animal kingdom, encompassing more than 80% of all described species.

Additional Information

• Phylum Echinodermata

• This phylum includes marine animals like starfish, sea urchins, and sand dollars.

• Echinoderms have a unique water vascular system used for locomotion and feeding.

• They exhibit radial symmetry as adults, which is different from the bilateral symmetry seen in arthropods.

• Phylum Annelida

• Annelids include segmented worms like earthworms, leeches, and polychaetes.

• They have a segmented body but lack jointed appendages.

• Annelids have a coelom, a fluid-filled body cavity that provides a hydrostatic skeleton.

• Phylum Nematoda

• Nematodes, or roundworms, are unsegmented worms with a cylindrical body.

• They have a complete digestive system but lack jointed appendages.

• Many nematodes are parasitic, affecting plants, animals, and humans.

Q12. Answer: (b) Dandi March

The correct answer is Dandi March.

Key Points

• The Dandi March, also known as the Salt March, was initiated by Mahatma Gandhi on March 12, 1930.

• This march was a direct action campaign of tax resistance and nonviolent protest against the British salt monopoly.

• The march lasted from March 12 to April 6, covering a distance of 240 miles (390 km) from Sabarmati Ashram to Dandi, a coastal village in Gujarat.

• The event marked the beginning of the Civil Disobedience Movement, where Indians were encouraged to break colonial laws and refuse to cooperate with British authorities.

Additional Information

• Civil Disobedience Movement:

• It was a mass protest against the British rule led by the Indian National Congress under the leadership of Mahatma Gandhi.

• The movement aimed to achieve Purna Swaraj, or complete self-rule, for India.

• Participants in the movement were encouraged to refuse to obey certain laws, pay taxes, and participate in the British administration.

• The movement saw widespread participation from all sections of Indian society, including peasants, workers, and women.

• Dandi March:

• The Dandi March was a significant event in the Indian independence movement.

• Gandhi and his followers marched to the Arabian Sea coast to produce salt from the seawater, defying the British salt laws.

• The march garnered international attention and highlighted the injustices of British colonial rule.

• The success of the march inspired millions of Indians to join the Civil Disobedience Movement.

• Salt Laws:

• The British salt monopoly was a system in which the British government controlled the production and sale of salt in India.

• Indians were prohibited from collecting or selling salt independently, forcing them to buy it from British sources at high prices.

• The salt tax was seen as particularly unjust because salt is a basic necessity for survival.

• The Dandi March directly challenged this monopoly and symbolized the broader struggle against British economic exploitation.

• Impact of the Civil Disobedience Movement:

• The movement significantly weakened British authority and legitimacy in India.

• It increased nationalistic fervor and unity among Indians.

• The British were forced to negotiate with Indian leaders, leading to the eventual independence of India in 1947.

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• The Civil Disobedience Movement is remembered as a crucial step in India's struggle for freedom.

Q13. Answer: (b) Vitamin C

The correct answer is Vitamin C.

Key Points

• Vitamin C, also known as ascorbic acid, is an essential nutrient for humans.
• It is a water-soluble vitamin and a powerful antioxidant.
• Vitamin C is vital for the maintenance of healthy skin, blood vessels, bones, and cartilage.
• It also aids in the healing of wounds and the absorption of iron from plant-based foods.

Additional Information

• Vitamin A
• Vitamin A is a fat-soluble vitamin important for vision, immune function, and reproduction.
• It also helps the heart, lungs, kidneys, and other organs work properly.
• Vitamin A comes in two forms: preformed vitamin A (retinol and retinyl ester) and provitamin A carotenoids.
• Sources include dairy products, fish, and meat, especially liver.
• Vitamin D
• Vitamin D is a fat-soluble vitamin that is important for maintaining healthy bones and teeth.
• It also supports the immune, brain, and nervous system health.
• Vitamin D can be synthesized by the body through exposure to sunlight.
• Food sources include fatty fish, beef liver, cheese, and egg yolks.
• Vitamin B
• Vitamin B refers to a group of eight water-soluble vitamins that play important roles in cell metabolism.
• These include B1 (thiamine), B2 (riboflavin), B3 (niacin), B5 (pantothenic acid), B6 (pyridoxine), B7 (biotin), B9 (folic acid), and B12 (cobalamin).
• Each of these vitamins contributes to different functions, such as energy production and the formation of red blood cells.
• Sources include whole grains, meat, eggs, dairy products, seeds and nuts, and dark, leafy vegetables.

Q14. Answer: (c) 36

Given:

Fractions: 2/3, 3/4, 4/5, 9/11

Formula Used:

L.C.M. of fractions = L.C.M. of numerators / H.C.F. of denominators

Calculation:

Numerators: 2, 3, 4, 9

Denominators: 3, 4, 5, 11

Step 1: Find L.C.M. of numerators:

L.C.M. of 2, 3, 4, 9

Prime factorization:

$2 = 2^1$

$3 = 3^1$

$4 = 2^2$

$9 = 3^2$

L.C.M. = $2^2 \times 3^2 = 4 \times 9 = 36$

Step 2: Find H.C.F. of denominators:

H.C.F. of 3, 4, 5, 11

$3 = 3^1$

$4 = 2^2$

$5 = 5^1$

$11 = 11^1$

Since there are no common prime factors, H.C.F. = 1

Step 3: Calculate L.C.M. of fractions:

L.C.M. = L.C.M. of numerators / H.C.F. of denominators

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=> L.C.M. = 36 / 1

=> L.C.M. = 36

The L.C.M. of 2/3, 3/4, 4/5, 9/11 is 36.

Q15. Answer: (b) Cooperative societies

The correct answer is Cooperative societies.

Key Points

• Article 43B in Part IV of the Constitution of India explicitly deals with the promotion of cooperative societies.

• It mandates the state to promote voluntary formation, autonomous functioning, democratic control, and professional management of cooperative societies.

• This article falls under the Directive Principles of State Policy (DPSP), which are non-justiciable but aim to guide the state in formulating policies and laws.

• The inclusion of Article 43B was brought about by the 97th Constitutional Amendment Act, 2011, highlighting the importance of cooperatives in the Indian economy.

Additional Information

• Directive Principles of State Policy (DPSP)

• The Directive Principles are guidelines or principles given to the federal institutes governing the state of India, to be kept in citation while framing laws and policies.

• They are non-justiciable in nature, meaning they are not enforceable by any court for their violation.

• The main aim of DPSPs is to create social and economic conditions under which the citizens can lead a good life.

• They also aim to establish social and economic democracy through a welfare state.

• 97th Constitutional Amendment Act, 2011

• This amendment added a new Part IXB to the Constitution, which is dedicated to cooperative societies.

• It aims to encourage economic activities of cooperatives which in turn help progress rural India.

• It also made the right to form cooperative societies a fundamental right under Article 19(1)(c).

• This amendment also inserted Article 43B in the DPSPs to ensure the promotion of cooperatives.

• Cooperative Societies in India

• Cooperative societies are voluntary associations of individuals having common needs who combine forces for the achievement of common economic interests.

• They play a significant role in the socioeconomic development of the country, especially in rural areas.

• Examples include agricultural cooperatives, consumer cooperatives, housing cooperatives, and many more.

• The Indian government has been actively promoting cooperative societies through various schemes and legislative measures to enhance their functioning and management.

Q16. Answer: (c) International Red Cross

The correct answer is International Red Cross.

Key Points

• The International Red Cross was founded by Henry Dunant, who was awarded the first Nobel Peace Prize in 1901 for his role in founding this organization.

• The International Red Cross aims to provide humanitarian aid and emergency assistance, disaster relief, and education.

• The organization is headquartered in Geneva, Switzerland, and operates worldwide.

• The International Red Cross has a mission to protect human life and health, ensure respect for all human beings, and prevent and alleviate human suffering.

Additional Information

• Organisation for the Prohibition of Chemical Weapons (OPCW)

• An intergovernmental organization that aims to eliminate chemical weapons and prevent their use through the implementation of the Chemical Weapons Convention.

• Headquartered in The Hague, Netherlands.

• Received the Nobel Peace Prize in 2013.

• World Wide Fund for Nature (WWF)

• Founded in 1961, it is an international non-governmental organization working in the field of wilderness preservation and the reduction of human impact on the environment.

• Headquartered in Gland, Switzerland.

• Focuses on issues such as climate change, endangered species, and sustainable practices.

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• Medecins Sans Frontieres (Doctors Without Borders)

• An international humanitarian medical non-governmental organization known for its projects in conflict zones and in countries affected by endemic diseases.

• Founded in 1971 in Paris, France.

• Provides medical care, training, and infrastructure in affected regions.

This HTML source code provides a detailed explanation of the correct answer, including key points about the International Red Cross and additional information about other related organizations.

Q17. Answer: (d) Only conclusions B follows.

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

Conclusions:

A. Poem is not a tree → Does not follow (As poem is a tree. As whole poems comes in trees, therefore it is false.)

B. Some poems are clothes → Follow (As some clothes are poems. As some part of poems is common with clothes, therefore it is true.)

Therefore Here, Only conclusion B follows.

Hence, "Option 4" is the correct answer.

Q18. Answer: (a) Dakshin Yamunotri

The correct answer is Dakshin Yamunotri.

Key Points

• Dakshin Yamunotri is not an Indian research base in Antarctica.

• India has set up three research stations in Antarctica: Dakshin Gangotri, Maitri, and Bharati.

• Dakshin Gangotri was the first Indian scientific research base station in Antarctica, established in 1983-84.

• Maitri was commissioned in 1989 and is India's second research station in Antarctica.

• Bharati is the third research base and was established in 2012.

Additional Information

• Dakshin Gangotri

• It was the first Indian scientific research base station in Antarctica.

• Established during the third Indian expedition to Antarctica in 1983-84.

• Currently, it is used as a supply base and transit camp.

• Maitri

• Commissioned in 1989, it is India's second research station in Antarctica.

• It is located on the rocky mountainous region called Schirmacher Oasis.

• Maitri has living accommodation for 25 people and is used for various research activities.

• Bharati

• Established in 2012, Bharati is India's third research base in Antarctica.

• It is located in the Larsemann Hills.

• The station is a modern, eco-friendly facility and can accommodate 47 people in the main building.

• Bharati supports research in atmospheric, biological, earth, and marine sciences.

Q19. Answer: (b) Kaiser-i-Hind

The correct answer is Kaiser-i-Hind.

Key Points

• The Kaiser-i-Hind was a medal awarded by the British government in India for public service.

• Mahatma Gandhi was awarded the Kaiser-i-Hind in 1915 for his contributions to public welfare.

• In 1920, Gandhiji returned the Kaiser-i-Hind medal as a gesture of protest against the Jallianwala Bagh massacre.

• This act of returning the medal was a significant move in Gandhiji's non-cooperation movement against the British colonial rule.

Additional Information

• Jallianwala Bagh Massacre

• The Jallianwala Bagh massacre took place on April 13, 1919, in Amritsar, Punjab.

• British troops, under the command of General Reginald Dyer, opened fire on a peaceful gathering, killing hundreds of unarmed civili

Q20. Answer: (a) Flash drive

The correct answer is Flash drive.

Key Points

• A flash drive, also known as a USB drive or thumb drive, is an external storage device that connects to a computer via a USB port.

• It is not an integral internal component of a computer but is used for portable data storage and transfer.

• Flash drives are commonly used to store and transfer files between computers and other devices.

• Unlike internal components like RAM, video card, and motherboard, a flash drive is not necessary for the computer's internal operations.

Additional Information

• RAM (Random Access Memory)

• RAM is a type of computer memory that can be accessed randomly.It is a volatile memory used to store data that is being currently processed by the CPU.

• RAM is crucial for the speed and performance of a computer.

• More RAM allows a computer to handle more tasks simultaneously.

• Video Card

• A video card, also known as a graphics card, is an internal component responsible for rendering images and videos on the computer's display.

• It has its own processor, called a GPU (Graphics Processing Unit), and memory to handle graphics-intensive tasks.

• High-performance video cards are essential for gaming, video editing, and other graphics-intensive applications.

• It is installed on the motherboard and connects to the display through various ports like HDMI, DisplayPort, or DVI.

• Motherboard

• The motherboard is the main circuit board of a computer.It houses the CPU, RAM, and other essential components and provides connectors for other peripherals.

• It serves as the central hub for communication between all the computer's hardware components.

• Motherboards come in different form factors, such as ATX, microATX, and mini-ITX, to fit various types of computer cases.

• Flash Drive

• A flash drive is a portable storage device that uses flash memory.

• It connects to a computer's USB port and is used for data transfer and storage.

• Flash drives come in various storage capacities, ranging from a few gigabytes to several terabytes.

• They are commonly used to store documents, photos, videos, and other files.

Q21. Answer: (d) 7/8

Given:

Fractions: 13/16, 17/24, 5/12, 7/8

Formula Used:

To compare fractions, convert them to have a common denominator and compare their numerators.

Calculation:

Common denominator for 16, 24, 12, and 8 is 48.

Convert each fraction:

13/16 = (13 × 3)/(16 × 3) = 39/48

17/24 = (17 × 2)/(24 × 2) = 34/48

5/12 = (5 × 4)/(12 × 4) = 20/48

7/8 = (7 × 6)/(8 × 6) = 42/48

Comparing numerators: 39, 34, 20, 42

The greatest numerator is 42.

The greatest fraction is 7/8.

Q22. Answer: (d) x = 55/8

Given:

Equation: 6(8x + 25) - 70 = 5(8x + 25)

Formula Used:

Simplify and solve for x.

Calculation:

Expand both sides:

=> 6(8x + 25) - 70 = 5(8x + 25)

=> 48x + 150 - 70 = 40x + 125

Combine like terms:

=> 48x + 80 = 40x + 125

Isolate x:

=> 48x - 40x = 125 - 80

=> 8x = 45

Divide by 8:

=> x = 45 / 8

=> x = 55/8

The correct answer is option 4: x = 55/8

Q23. Answer: (d) World Health Organization (WHO) - New York

The correct answer is World Health Organization (WHO) - New York.

Key Points

• The World Health Organization (WHO) is a specialized agency of the United Nations responsible for international public health.

• WHO was established on 7 April 1948 and is headquartered in Geneva, Switzerland.

• The main goal of WHO is to build a better, healthier future for people all over the world.

• WHO works in more than 150 countries, collaborating with governments and other partners to ensure the highest attainable level of health for all people.

Additional Information

• United Nations Educational, Scientific and Cultural Organization (UNESCO)

• UNESCO was founded on 16 November 1945.

• It is headquartered in Paris, France.

• The organization aims to build peace through international cooperation in education, the sciences, and culture.

• The International Court of Justice (ICJ)

• ICJ, also known as the World Court, is the principal judicial organ of the United Nations.

• It is headquartered in The Hague, Netherlands.

• It was established in June 1945 by the Charter of the United Nations and began work in April 1946.

• International Atomic Energy Agency (IAEA)

• The IAEA was established as an autonomous organization on 29 July 1957.

• It is headquartered in Vienna, Austria.

• The IAEA works with its Member States and multiple partners worldwide to promote the safe, secure and peaceful use of nuclear technologies.

Q24. Answer: (b) Banker to the public

The correct answer is Banker to the public.

Key Points

• The Reserve Bank of India (RBI) acts as the central bank of the country, managing the monetary policy of the Indian rupee.

• RBI serves as the banker to the government, managing the banking needs of both the central and state governments.

• It is responsible for issuing the currency notes in India and ensuring their circulation within the economy.

• The RBI acts as the lender of last resort, providing financial assistance to banks during times of financial distress.

Additional Information

• Banker to the Government:

• RBI handles the banking transactions of the central and state governments, including their receipts and payments.

• It also manages the government's public debt and issues new loans on behalf of the government.

• Bank of Currency Issue:

• RBI has the sole authority to issue currency notes in India, ensuring the supply of clean and genuine notes.

• This role involves designing, printing, and circulating the currency as well as managing its withdrawal and destruction.

• Lender of the Last Resort:

• In times of financial crisis, RBI provides emergency funding to banks facing severe liquidity shortages.

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• This support helps to maintain stability in the banking system and prevents bank failures.

• Banker to the Public:

• This is not a function of the RBI as it does not directly interact with the general public for their day-to-day banking needs.

• Commercial banks serve this role by providing various banking services to individuals and businesses.

Q25. Answer: (d) Lashkari Zaban

The correct answer is Lashkari Zaban.

Key Points

• Lashkari Zaban is another name for the Urdu language, which is widely spoken in Pakistan and India.

• Urdu developed during the Mughal era and is heavily influenced by Persian, Arabic, and Turkish languages.

• The term "Lashkari" means "military" or "army" in Persian, reflecting the language's origin among the soldiers of the Mughal army.

• Urdu is written in the Perso-Arabic script and has a rich literary tradition, including poetry, prose, and religious texts.

Additional Information

• Shauraseni

• Shauraseni is an ancient Middle Indo-Aryan language that is considered the predecessor of many modern Indic languages, including Hindi and Punjabi.

• Farsi

• Farsi, also known as Persian, is the official language of Iran and is also spoken in Afghanistan and Tajikistan.

• It belongs to the Indo-Iranian branch of the Indo-European languages.

• Awadhi

• Awadhi is an Eastern Hindi language spoken primarily in the Awadh region of India, including parts of Uttar Pradesh and Madhya Pradesh.

• It has a significant literary tradition, including contributions to Indian epic poetry and folklore.

• Urdu

• Urdu is a member of the Indo-Aryan language family and is closely related to Hindi.

• It is the national language and lingua franca of Pakistan and one of the 22 scheduled languages of India.

• Urdu has a rich tradition in poetry and literature, with famous poets like Mirza Ghalib and Allama Iqbal.

Q26. Answer: (a) 23

The logic followed here is:

Logic: (1st number × 2) - 1 = 2nd number.

Now,

For, 18 : 35

=> (18 × 2) - 1 = 36 - 1 = 35.

Similarly, for 12 : ?

=> (12 × 2) - 1 = 24 - 1 = 23.

Hence, the correct answer is "Option 1".

Q27. Answer: (b) Krishna

The correct answer is Krishna.

Key Points

• Manipuri classical dance, also known as Jagoi, is one of the major Indian classical dance forms originating from the northeastern state of Manipur.

• This dance form often depicts scenes from the life and the divine play (Ras Lila) of Lord Krishna, who is a major deity in Hinduism.

• Manipuri dance is characterized by graceful and fluid movements and is deeply religious and spiritual in nature.

• The dance form encompasses both solo and group performances, with the Ras Lila being a popular group performance that narrates the love story of Krishna and Radha.

Additional Information

• Manipuri Dance:

• Manipuri dance is one of the eight classical dances of India and is particularly known for its themes based on the Vaishnavism tradition of Hinduism, which emphasizes the worship of Lord Vishnu and his avatars, especially Krishna and Rama.

• Vaishnavism is one of the major traditions within Hinduism that reveres Vishnu and his avatars as the supreme deities.

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• The Ras Lila, a major theme in Manipuri dance, is a dramatic enactment of the love story between Krishna and Radha, and it is performed during special occasions and festivals, especially on the night of the full moon.

• The dance form includes various genres such as classical, folk, and tribal forms, with each genre showcasing unique aspects of Manipuri culture and religious practices.

• Lord Krishna:

• Lord Krishna is one of the most widely revered and popular Hindu deities, known for his role in the Mahabharata and the Bhagavad Gita.

• He is considered the eighth avatar of Vishnu and is often depicted as a divine lover, cowherd, and supreme being.

• Krishna's life and teachings are a central theme in many Hindu texts, including the Bhagavad Gita, the Bhagavata Purana, and various other scriptures and folklore.

• His divine play, or Leela, especially his youthful escapades with the gopis (milkmaids) of Vrindavan, is a significant theme in various Indian classical dance forms, including Manipuri.

• Indian Classical Dance Forms:

• India has a rich tradition of classical dance, with eight officially recognized classical dance forms: Bharatanatyam, Kathak, Kathakali, Kuchipudi, Manipuri, Mohiniyattam, Odissi, and Sattriya.

• Each dance form has its own distinctive style, techniques, costumes, and themes, often rooted in ancient Indian texts and traditions.

• These classical dances are not just forms of entertainment but are also deeply connected to religious and spiritual practices in India.

• They often involve intricate footwork, expressive hand gestures (mudras), and facial expressions, with performances narrating mythological stories, religious themes, and cultural traditions.

Q28. Answer: (b) XX

The correct answer is XX.

Key Points

• Human beings have 23 pairs of chromosomes, including one pair of sex chromosomes.

• Females have two X chromosomes (XX) while males have one X and one Y chromosome (XY).

• The combination of XX chromosomes determines the female sex of the child.

• During reproduction, the mother always contributes an X chromosome, while the father can contribute either an X or a Y chromosome, determining the child's sex.

Additional Information

• Chromosomes: Chromosomes are thread-like structures located inside the nucleus of animal and plant cells. Each chromosome is made of protein and a single molecule of deoxyribonucleic acid (DNA).

• Sex Chromosomes: Sex chromosomes are one of the pairs of chromosomes that determine the sex of an organism. Humans and most other mammals have two sex chromosomes: X and Y.

• Genetics: Genetics is the study of genes, genetic variation, and heredity in living organisms. It is generally considered a field of biology, but it intersects frequently with many of the life sciences and is strongly linked with the study of information systems.

• Reproduction: Reproduction is the biological process by which new individual organisms are produced. It is a fundamental feature of all known life; each individual organism exists as the result of reproduction.

Q29. Answer: (c) 300

Given:

The difference between two numbers is 35% of the larger number.

The smaller number is 195.

Formula Used:

Difference = 35% of the larger number

Calculation:

Let the larger number be x.

Difference between the numbers = x - 195

According to the given information:

x - 195 = 0.35x

Simplify the equation:

x - 0.35x = 195

0.65x = 195

Solving for x :

=> x = 195/0.65

=> x = 300

The larger number is 300.

Q30. Answer: (d) 0.1

Given:

$0.17 \div p^2 = 17$

Formula Used:

To solve for p, we use the equation:

$p^2 = 0.17 / 17$

Calculation:

=> $p^2 = 0.17 / 17$

=> $p^2 = 0.01$

=> $p = \sqrt{0.01}$

=> p = 0.1

The correct answer is option 4 (0.1).

Q31. Answer: (b) 3030/119

Given:

Distance covered by the train = 12 km.

Time taken = 25 minutes = 25/60 hours = 5/12 hours.

Initial speed = Distance / Time

Speed = 12 / (5/12) = 12 × 12 / 5 = 144 / 5 = 28.8 km/hr.

Formula Used:

New time taken = Distance / New speed

Calculation:

New speed = Initial speed - Decrease in speed

New speed = 28.8 km/hr - 5 km/hr = 23.8 km/hr

New time taken = Distance / New speed

New time taken = 12 km / 23.8 km/hr

New time taken in hours = 12 / 23.8

New time taken in hours = 12/23.8

New time taken in hours = 6/11.9

New time taken in minutes = 6/11.9 × 60

New time taken = 3600/119 = 3030/119

The correct answer is option 2.

Q32. Answer: (d) Concave

The correct answer is Concave.

Key Points

• Concave mirrors are used to focus light, which helps in producing powerful parallel beams of light.

• They have a reflective surface that curves inward, resembling a portion of the interior of a sphere.

• When the light rays parallel to the principal axis fall on a concave mirror, they converge at a single point called the focal point.

• This property of concave mirrors makes them ideal for use in devices like torches, searchlights, and vehicle headlights.

Additional Information

• Convex Mirror:

• Convex mirrors have an outward-curved reflective surface.

• They diverge light rays, spreading them outwards.

• They are used in situations where a wider field of view is needed, such as in rear-view mirrors of vehicles.

• Cylindrical Mirror:

• Cylindrical mirrors have a reflective surface that curves in only one direction.

• They are used in applications requiring the focusing of light along a line, such as in some optical instruments.

• Bifocal Mirror:

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• Bifocal mirrors have two distinct optical powers.
• They are typically used in eyeglasses to provide both near and distant vision correction.
• Concave Mirror:
• Concave mirrors have an inward-curved reflective surface.
• They converge light rays to a focal point, which helps in creating powerful and focused beams of light.
• They are commonly used in applications such as telescopes, shaving mirrors, and flashlights.

Q33. Answer: (b) Malachite

The correct answer is Malachite.

Key Points

• Malachite is a copper carbonate hydroxide mineral with the formula $Cu_2CO_3(OH)_2$.
• It is known for its green color and is used as a gemstone and pigment in paints.
• Malachite forms at shallow depths within the Earth's crust, typically in the oxidized zones of copper deposits.
• It is one of the most important ores of copper and has been mined for this metal since antiquity.

Additional Information

• Chromite
• Chromite is an iron chromium oxide with the formula $FeCr_2O_4$.
• It is the principal ore of chromium, a metal used to make stainless steel, nichrome, and chrome plating.
• Haematite
• Haematite, also spelled hematite, is an iron oxide with the formula Fe_2O_3.
• It is the most important ore of iron and is used to produce iron and steel.
• Magnetite
• Magnetite is an iron oxide with the formula Fe_3O_4.
• It is one of the main iron ores and is used in the production of iron and steel.

Q34. Answer: (a) System software

The correct answer is System software.

Key Points

• An operating system (OS) is a type of system software that acts as an interface between the user and the computer hardware.
• The primary function of system software, including the OS, is to manage the hardware components and provide a platform for running application software.
• Examples of operating systems include Microsoft Windows, macOS, Linux, and Android.
• Operating systems perform essential tasks such as managing memory, processes, hardware devices, and file systems.

Additional Information

• System Software:
• System software is designed to provide a platform for other software. Examples include operating systems, utility software, and device drivers.
• It is crucial for the system's overall functioning and helps manage hardware resources.
• System software operates at a basic level, enabling the functioning of application software and hardware interactions.
• Application Software:
• Application software is designed to help users perform specific tasks. Examples include word processors, spreadsheets, and web browsers.
• It runs on top of system software and provides user-centric functionalities.
• Application software is generally more user-friendly and task-specific compared to system software.
• Hardware:
• Hardware refers to the physical components of a computer system, such as the CPU, memory devices, and input/output devices.
• Hardware components are managed by system software to execute various tasks.
• Without hardware, software would have no platform to run on, making it an essential part of a computer system.

Q35. Answer: (c) Sulphur

The correct answer is Sulphur.

Key Points

• Silver reacts with sulphur or sulphur-containing compounds in the air to form silver sulphide (Ag_2S), which is black in color.

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• This reaction is known as tarnishing, which commonly affects silverware and jewelry.

• The formation of silver sulphide is a chemical change where silver (Ag) reacts with hydrogen sulphide (H2S) or other sulphur compounds.

• Tarnishing can be accelerated in environments with high levels of pollution or humidity, as these conditions often contain more sulphur compounds.

Additional Information

• Silver Sulphide (Ag2S)

• Silver sulphide is a black compound that forms when silver reacts with sulphur or hydrogen sulphide.

• This reaction is a common cause of tarnish on silver items, making them appear dull and blackened.

• Silver sulphide is insoluble in water and is often removed by polishing or using chemical dips designed for silver cleaning.

• Tarnishing

• Tarnishing is a chemical process that occurs when a metal reacts with a non-metal compound, resulting in a thin layer of corrosion on the metal's surface.

• In the case of silver, tarnishing occurs due to the formation of silver sulphide from the reaction with sulphur compounds in the air.

• Preventive measures include storing silver in airtight containers, using anti-tarnish strips, and regularly cleaning the silver items.

• Hydrogen Sulphide (H2S)

• Hydrogen sulphide is a colorless, poisonous, and flammable gas with the characteristic foul odor of rotten eggs.

• It is commonly found in volcanic gases, natural gas, and some mineral springs.

• In the atmosphere, hydrogen sulphide can react with silver to form silver sulphide, leading to tarnishing.

Q36. Answer: (a) 24 days

Given:

A and B together can finish a task in 12 days.

B and C together can finish it in 18 days.

A is three times more efficient than C.

Formula Used:

Work formula: 1 day's work of A + 1 day's work of B = 1/12

Work formula: 1 day's work of B + 1 day's work of C = 1/18

Efficiency relation: A = 3C

Calculation:

Let the efficiency of C be C units/day.

Then the efficiency of A = 3C units/day.

Let the efficiency of B be B units/day.

From the first work formula:

1 day's work of A + 1 day's work of B = 1/12

=> 3C + B = 1/12

From the second work formula:

1 day's work of B + 1 day's work of C = 1/18

=> B + C = 1/18

Solving the two equations:

Equation 1: 3C + B = 1/12

Equation 2: B + C = 1/18

Subtracting Equation 2 from Equation 1:

=> (3C + B) - (B + C) = 1/12 - 1/18

=> 2C = 1/12 - 1/18

=> 2C = (3 - 2) / 36

=> 2C = 1 / 36

=> C = 1 / 72

Substitute C back into Equation 2:

=> B + 1/72 = 1/18

=> B = 1/18 - 1/72

=> B = (4 - 1) / 72

=> B = 3 / 72

=> B = 1 / 24

So, B alone can finish the task in 24 days.

The correct answer is option 1.

Q37. Answer: (b) 3

Given:

x + y + z = 0

Formula used:

We need to simplify the expression:

$(x^2)/yz + (y^2)/zx + (z^2)/xy$

Calculation:

Start by factoring the terms using x + y + z = 0:

$(x^2)/yz + (y^2)/zx + (z^2)/xy = (x^3 + y^3 + z^3)/xyz$

We know that when x + y + z = 0, the identity for cubes is:

$x^3 + y^3 + z^3 - 3xyz = 0$

Therefore, $x^3 + y^3 + z^3 = 3xyz$

Substitute this into the equation:

$(x^2)/yz + (y^2)/zx + (z^2)/xy = (x^3 + y^3 + z^3)/xyz$

$= (x^2)/yz + (y^2)/zx + (z^2)/xy = 3xyz/xyz = 3$

Therefore The value of the expression is 3.

Q38. Answer: (c) The Treaty of Maastricht, 1992

The correct answer is The Treaty of Maastricht, 1992.

Key Points

• The Treaty of Maastricht was signed on 7 February 1992 and came into force on 1 November 1993.

• It marked a significant step in European integration and established the European Union (EU).

• The treaty introduced the three-pillar structure of the EU, which included the European Communities, Common Foreign and Security Policy (CFSP), and Justice and Home Affairs (JHA).

• The Maastricht Treaty also laid the foundation for the creation of a single European currency, the euro, and established criteria for member states to adopt the euro.

Additional Information

• The Treaty of Lisbon, 2007:

• Signed on 13 December 2007 and entered into force on 1 December 2009.

• Aimed to enhance the efficiency and democratic legitimacy of the EU and to improve the coherence of its actions.

• Introduced a more powerful European Parliament and a long-term President of the European Council.

• The Single European Act, 1986:

• Signed on 17 February 1986 and came into force on 1 July 1987.

• Focused on creating a single European market by 1992, removing trade barriers, and increasing political cooperation among member states.

• Laid the groundwork for the subsequent Maastricht Treaty.

• The Treaty of Amsterdam, 1997:

• Signed on 2 October 1997 and entered into force on 1 May 1999.

• Amended the Maastricht Treaty and the Treaty of Rome.

• Focused on reforms to enhance the efficiency of the EU, including more power to the European Parliament and changes in immigration and asylum policies.

Q39. Answer: (c) 5.1106

Given:

If √2116 = 46, then find the value of √21.16 + √0.2116 + √0.002116 + √0.00002116

Formula Used:

$\sqrt{(a \times 10^n)} = \sqrt{a} \times 10^{(n/2)}$

Calculation:

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√2116 = 46

√21.16 = √(2116 × 10^(-2))

=> √2116 × 10^(-1) = 46 × 10^(-1) = 4.6

√0.2116 = √(2116 × 10^(-4))

=> √2116 × 10^(-2) = 46 × 10^(-2) = 0.46

√0.002116 = √(2116 × 10^(-6))

=> √2116 × 10^(-3) = 46 × 10^(-3) = 0.046

√0.00002116 = √(2116 × 10^(-8))

=> √2116 × 10^(-4) = 46 × 10^(-4) = 0.0046

√21.16 + √0.2116 + √0.002116 + √0.00002116

=> 4.6 + 0.46 + 0.046 + 0.0046

=> 5.1106

The correct answer is option 3.

Q40. Answer: (d) K Kasturirangan

The correct answer is K Kasturirangan.

Key Points

• K Kasturirangan is an eminent Indian space scientist who played a key role in formulating the Draft National Education Policy (NEP) 2019.

• He was the chairman of the committee responsible for drafting the NEP 2019, which aims to reform and revitalize the Indian education system.

• Under his leadership, the committee focused on making education more holistic, flexible, multidisciplinary, aligned with the needs of the 21st century, and aimed at bringing out the unique capabilities of each student.

• K Kasturirangan has also served as the former chairman of ISRO (Indian Space Research Organisation) and has been awarded several prestigious awards, including the Padma Vibhushan, Padma Bhushan, and Padma Shri.

Additional Information

• National Education Policy (NEP) 2019:

• The NEP 2019 is a comprehensive framework to guide the development of education in the country. It covers elementary to higher education in both rural and urban India.

• The policy emphasizes the importance of early childhood care and education (ECCE), foundational literacy and numeracy, and the overall development of students.

• It proposes a new curricular structure, which includes a 5+3+3+4 design, corresponding to the ages 3-8 years (Foundational Stage), 8-11 (Preparatory Stage), 11-14 (Middle Stage), and 14-18 (Secondary Stage).

• The policy also focuses on teacher education and training, setting up a National Higher Education Regulatory Authority (NHERA), and promoting the use of technology in education.

• ISRO (Indian Space Research Organisation):

• ISRO is the space agency of the Government of India, headquartered in Bengaluru.

• Its primary objective is to advance space technology and use its applications for various national tasks.

• ISRO has successfully launched several important missions, including Chandrayaan, Mangalyaan, and various satellite launches.

• Padma Awards:

• The Padma Awards are one of the highest civilian honors in India, categorized into three levels: Padma Vibhushan, Padma Bhushan, and Padma Shri.

• These awards are given in various disciplines/fields such as art, social work, public affairs, science and engineering, trade and industry, medicine, literature and education, sports, and civil service.

Q41. Answer: (d) (1 - x^(16))

Given:

Expression: (1 + x) (1 + x²) (1 + x^4) (1 + x^8) (1 - x)

Formula Used:

Utilize the identity: (1 + x)(1 - x) = 1 - x²

Calculation:

First, pair (1 + x) and (1 - x)

=> (1 + x)(1 - x) = 1 - x²

Next, multiply the result with $(1 + x^2)$

=> $(1 - x^2)(1 + x^2) = 1 - x^4$

Now, multiply this result with $(1 + x^4)$

=> $(1 - x^4)(1 + x^4) = 1 - x^8$

Finally, multiply with $(1 + x^8)$

=> $(1 - x^8)(1 + x^8) = 1 - x^{16}$

The value of the expression is $(1 - x^{16})$.

Q42. Answer: (a) 300%

Given:

If the selling price is doubled, the profit becomes three times the original.

Formula Used:

Profit Percentage = (Profit / Cost Price) × 100

Calculation:

Let the Cost Price (CP) = 100 (assume for simplicity)

Let the original Selling Price (SP) = SP

Original Profit = SP - CP

Original Profit Percentage = ((SP - CP) / CP) × 100

When SP is doubled, New SP = 2 × SP

New Profit = 2 × SP - CP

Given that New Profit = 3 × Original Profit

=> 2 × SP - CP = 3 × (SP - CP)

=> 2 × SP - 100 = 3 × (SP - 100)

=> 2 × SP - 100 = 3 × SP - 300

=> 2 × SP - 3 × SP = -300 + 100

=> -SP = -200

=> SP = 200

Original Profit = SP - CP = 200 - 100 = 100

Original Profit Percentage = (100 / 100) × 100 = 100%

New Profit = 3 × 100 = 300

New Profit Percentage = (300 / 100) × 100 = 300%

The new profit percentage is 300%.

Q43. Answer: (b) 1372 sq cm

Given:

Diameter of the circle = 49 cm

Ratio of the sides of the rectangle = 7 : 4

Formula Used:

Circumference of circle=π×d

Perimeter of the rectangle = 2(l + b)

Area of the rectangle = l × b

Calculation:

Radius of the circle = 49 / 2 = 24.5 cm

Circumference of the circle = π×49

Circumference of the circle = (22/7) × 49=154227×49=154227×49=154227×49=154227×49=154227×49=154227×49=154227×49=154 cm

Let the length of the rectangle be 7x and the breadth be 4x

Perimeter of the rectangle = 2(7x + 4x) = 22x

Since the perimeter of the rectangle is equal to the circumference of the circle:

22x = 154

x = 154/22 = 7

Length of the rectangle = 7 × 7 = 49 cm

Breadth of the rectangle = 4 × 7 = 28 cm
Area of the rectangle = 49 × 28
Area = 1372 cm²
The correct answer is option 2: 1372 sq cm.

Q44. Answer: (d) 0.24

Given:
We need to find the value of the series:
1/(2 × 4) + 1/(4 × 6) + 1/(6 × 8) + … + 1/(48 × 50)
Formula used:
Use the general term for such series:
1/(n(n+2)) = 1/2 (1/n - 1/(n+2))
Calculation:
Apply the formula to each term:
1/(2 × 4) = 1/2 (1/2 - 1/4)
1/(4 × 6) = 1/2 (1/4 - 1/6)
1/(6 × 8) = 1/2 (1/6 - 1/8)
Continue this for all terms up to:
1/(48 × 50) = 1/2 (1/48 - 1/50)
Step 2: Summing all terms will create a telescoping series, where most terms cancel out:
1/2 (1/2 - 1/50)
Conclusion:
=> 1/2 (1/2 - 1/50) = 1/2 × 24/50 = 12/50 = 6/25 = 0.24
Therefore The value of the series is 0.24.

Q45. Answer: (c) Kazakhstan – Bishkek

The correct answer is Kazakhstan – Bishkek.
Key Points
• Kazakhstan's capital is Nur-Sultan, formerly known as Astana until 2019.
• Bishkek is the capital of Kyrgyzstan, not Kazakhstan.
• The mistake in the pair is that it incorrectly associates Bishkek with Kazakhstan instead of Kyrgyzstan.
• Nur-Sultan, the current capital of Kazakhstan, was renamed from Astana in honor of the former president Nursultan Nazarbayev.
Additional Information
• Bahamas:
• The capital of Bahamas is Nassau.
• Nassau is located on the island of New Providence, which is the most populous island in the Bahamas.
• Libya:
• The capital of Libya is Tripoli.
• Tripoli is the largest city in Libya and the principal seaport of the country.
• Belgium:
• The capital of Belgium is Brussels.
• Brussels is also the de facto capital of the European Union (EU) and hosts several major EU institutions.
• Kazakhstan:
• The correct capital of Kazakhstan is Nur-Sultan.
• Nur-Sultan was known as Astana until it was renamed in 2019 to honor the first president of Kazakhstan, Nursultan Nazarbayev.
• Kyrgyzstan:
• The capital of Kyrgyzstan is Bishkek.
• Bishkek is the largest city in Kyrgyzstan and serves as the country's political, economic, and cultural center.

Q46. Answer: (a) 839

The logic followed here is:
Hence, "Option 1" is the correct answer.

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Q47. Answer: (d) W

Given: Each boy has only one favourite sport.

Names of the boys → A, B, C, D, E, F, H and I are the names of the boys

Favourite sports → P, Q, R, S, T, U, V and W.

1) The favourite sport of D is S.

2) D and F do not like sports P and W.

3) B does not like sport W.

Boys	Sports
A	
B	W
C	
D	S
E	
F	P / W
H	
I	

4) A, C, E and H do not like sports U, P, W and S.

As A, C, E and H does not like sports U, P, W and S. So the only left options for A, C, E, and H are Q, R, T, and V.

As A, C, E and H are 4 boys who have only 4 sports options i.e. Q, R, T, and V.

So, the left options P, U, and W will assigned to the left boys i.e. B, F, G and I accordingly.

As it is given then F does not like sports P and W, therefore only left sports for F is U.

After assigning sports to F, the only sport left for B is P.

After assigning sports to B, the only sport left I is W.

Boys	Sports
A	Q / R / T / V
B	P
C	Q / R / T / V
D	S
E	Q / R / T / V
F	U
H	Q / R / T / V
I	W

Thus, W is the favourite sport of I.

Hence, "Option 4" is the correct answer.

Q48. Answer: (b) 77

Given:

a = 2b = 3c

a + b + c = 121

Calculation:

$\sqrt{(a^2 + b^2 + c^2)}$

Let a = k, 2b = k, 3c = k

=> b = k/2 and c = k/3

=> a + b + c = 121

=> k + k/2 + k/3 = 121

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=> 6k + 3k + 2k = 726

=> 11k = 726

=> k = 66

=> a = 66, b = 66/2 = 33, c = 66/3 = 22

=> $a^2 + b^2 + c^2 = 66^2 + 33^2 + 22^2$

=> 4356 + 1089 + 484 = 5929

=> √5929

=> 77

The correct answer is option 2.

Q49. Answer: (c) S

Given: There are four persons: P, Q, R and S. All the four persons play two games each and follow one profession.

1) P and Q are teachers.

2) P plays badminton.

3) The lawyer and both the teachers swimmers.

4) S plays carrom and is a lawyer.

Person	Profession	Games
P	Teachers	Badminton, Swimmers
Q	Teachers	
R		
S	Lawyer	Swimmers, Carrom

5) One of them is a doctor and plays football and cricket.

6) One of them also plays tennis.

Person	Profession	Games
P	Teachers	Badminton, Swimmers
Q	Teachers	Tennis
R	Doctor	Football, Cricket
S	Lawyer	Swimmers, Carrom

Thus, S the lawyer plays Carrom and is a swimmer.

Hence, "Option 3" is the correct answer.

Q50. Answer: (a) (3 - √3)/6

Given:

cos x - 3sin x = √3 sin x

Calculation:

Step 1: Move terms involving sin x to one side:

cos x = √3 sin x + 3 sin x

=> cos x = sin x (√3 + 3)

Step 2: Divide both sides by cos x :

(sin x)/(cos x) = 1/(√3 + 3)

=> tan x = 1/(√3 + 3)

Step 3: Rationalize the denominator:

tan x = 1/(√3 + 3) × (√3 - 3)/(√3 - 3) = (√3 - 3)/((√3)² - 9)

=> tan x = (√3 - 3)/(3 - 9) = (√3 - 3)/(-6)

Therefore The value of tan x = (3 - √3)/6 ..

Q51. Answer: (b) 23 : 18 : 9

Given:

Total amount = Rs. 50

A gets Rs. 5 more than B

B gets Rs. 9 more than C

Formula Used:

Let C's share be Rs. x

B's share = Rs. (x + 9)

A's share = Rs. (x + 9 + 5) = Rs. (x + 14)

Total share = A's share + B's share + C's share

Total share = 50

Calculation:

A's share = Rs. (x + 14)

B's share = Rs. (x + 9)

C's share = Rs. x

Total share = x + 14 + x + 9 + x = 50

=> 3x + 23 = 50

=> 3x = 27

=> x = 9

C's share = Rs. 9

B's share = Rs. (9 + 9) = Rs. 18

A's share = Rs. (9 + 14) = Rs. 23

Ratio of their shares = A : B : C = 23 : 18 : 9

The ratio of their shares is 23 : 18 : 9.

Q52. Answer: (c) 84U36

The logic followed here is:

Hence, "Option 3" is the correct answer.

Q53. Answer: (a) Charles Cornwallis

The correct answer is Charles Cornwallis.

Key Points

• Charles Cornwallis was the Governor-General of India from 1786 to 1793.

• He introduced the Permanent Settlement in 1793, which is also known as the Zamindari System.

• The Permanent Settlement created a new class of landlords with hereditary rights on land.

• It aimed to ensure a stable revenue base for the British East India Company by fixing the land revenue that zamindars had to pay.

Additional Information

• Permanent Settlement of Bengal

• The Permanent Settlement was introduced by Charles Cornwallis in 1793 to stabilize revenue collection by fixing the revenue to be collected from the zamindars permanently.

• Zamindars were recognized as the owners of the land, and they were responsible for collecting the revenue from the peasants and paying it to the British government.

• The revenue demand was fixed permanently, which meant that it would not be increased in the future.

• This system was expected to create a class of loyal landlords who would support British rule.

• Zamindari System

• Under this system, zamindars were given proprietary rights over the land and were responsible for collecting taxes from the peasants.

• They had to pay a fixed amount of revenue to the British government, regardless of the actual productivity or income from the land.

• Failure to pay the fixed revenue could result in the loss of their zamindari rights.

• This system led to the exploitation of peasants as zamindars often extracted more money than required to cover their costs and ensure their profits.

• Impact on Agriculture

• While the Permanent Settlement aimed to improve agricultural productivity, it often resulted in the neglect of land and exploitation of peasants.

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• Many zamindars, who did not reside on their estates, were more interested in maximizing their revenue than investing in agricultural improvements.

• Peasants were often overburdened with high rents and faced eviction if they failed to meet the demands of the zamindars.

• Revenue Collection

• The British government believed that the Permanent Settlement would ensure a regular and stable income from land revenues.

• However, it often led to financial distress among zamindars who were unable to meet the fixed revenue demands during times of poor harvest or natural calamities.

• This system also created a large number of absentee landlords who had little interest in the actual management of their estates.

Q54. Answer: (d) Natural gas pipeline

The correct answer is Natural gas pipeline.

Key Points

• The Pradhan Mantri Urja Ganga project aims to provide piped cooking gas to residents in eastern India, ensuring a cleaner and more efficient energy source.

• This project involves laying a 2,655 km long gas pipeline, extending from Jagdishpur in Uttar Pradesh to Haldia in West Bengal, covering various states like Bihar, Jharkhand, and Odisha.

• The project is expected to benefit millions of households and industries by providing an uninterrupted supply of natural gas.

• It also aims to establish Compressed Natural Gas (CNG) stations in cities along the pipeline route to promote the use of CNG in transportation.

Additional Information

• Natural Gas

• Natural gas is a fossil fuel composed primarily of methane, used for heating, electricity generation, and as fuel for vehicles.

• It is considered a cleaner alternative to other fossil fuels like coal and oil because it produces fewer pollutants and greenhouse gases.

• Natural gas can be transported in liquid form (LNG) or through pipelines in its gaseous state.

• India's focus on expanding its natural gas infrastructure is part of its broader energy strategy to enhance energy security and reduce environmental impact.

• Piped Natural Gas (PNG)

• Piped Natural Gas is delivered to homes and industries through a network of pipelines, making it convenient and reliable.

• PNG is used for cooking in homes, as well as for heating and cooling in industries.

• It is safer than traditional LPG cylinders as it is lighter than air and disperses quickly in case of a leak.

• PNG connections are being rapidly expanded in urban and semi-urban areas to provide cleaner energy options.

• Compressed Natural Gas (CNG)

• Compressed Natural Gas is natural gas under high pressure, used as a fuel alternative to gasoline, diesel, and propane.

• CNG is considered more environmentally friendly as it produces fewer emissions of pollutants and greenhouse gases.

• It is used primarily in vehicles, including cars, buses, and trucks, to reduce air pollution.

• The expansion of CNG stations along major routes is part of India's strategy to encourage the adoption of cleaner fuels in transportation.

Q55. Answer: (c) Provision of funding to non-corporate small business sector

The correct answer is Provision of funding to non-corporate small business sector.

Key Points

• The Pradhan Mantri Mudra Yojana (PMMY) was launched by the Government of India on 8th April 2015 to provide loans up to 10 lakh to the non-corporate, non-farm small/micro enterprises.

• The loans under PMMY are classified as MUDRA loans under the PMMY scheme.

• The MUDRA loans are given by Commercial Banks, RRBs, Small Finance Banks, MFIs, and NBFCs.

• There are three categories under the MUDRA scheme: Shishu (loans up to Rs. 50,000), Kishor (loans from Rs. 50,001 to Rs. 5 lakh), and Tarun (loans from Rs. 5,00,001 to Rs. 10 lakh).

Additional Information

• Shishu Category

• In the Shishu category, loans up to Rs. 50,000 are provided to micro-enterprises.

• This is the first stage of the business, and hence, the loans are given to those who are just starting their business.

• Kishor Category

• The Kishor category provides loans ranging from Rs. 50,001 to Rs. 5 lakh.

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• This is for enterprises that are already established but need funds for further growth and expansion.

• Tarun Category

• The Tarun category provides loans ranging from Rs. 5,00,001 to Rs. 10 lakh.

• This is for businesses that need a larger amount of funding for further expansion.

• Micro Units Development & Refinance Agency (MUDRA)

• MUDRA is responsible for developing and refinancing all Micro-enterprises sector by supporting the finance institutions which are in the business of lending to micro/small business entities engaged in manufacturing, trading, and service activities.

• MUDRA provides refinance support to Banks / MFIs for lending to micro units having loan requirements up to 10 lakh.

• MUDRA provides developmental and financial support to the micro-enterprise sector.

Q56. Answer: (a) Lord Minto

The correct answer is Lord Minto.

Key Points

• Lord Minto is referred to as the 'Father of Communal Electorate' in India because of his role in the introduction of separate electorates.

• During his tenure as Viceroy of India, the Indian Councils Act of 1909, also known as the Morley-Minto Reforms, was enacted.

• The Morley-Minto Reforms allowed for separate electorates for Muslims, which meant that Muslims could elect their representatives separately.

• This was a significant step in the constitutional history of India as it institutionalized communal representation.

Additional Information

• Indian Councils Act of 1909

• Also known as the Morley-Minto Reforms, named after the Secretary of State for India, John Morley, and the Viceroy of India, Lord Minto.

• It introduced a limited increase in the involvement of Indians in the governance of British India.

• The act allowed for the inclusion of elected Indian members in the legislative councils, both at the central and provincial levels.

• The most notable feature was the introduction of separate electorates for Muslims, which meant that Muslims could elect their representatives separately from the Hindus.

• This move was aimed at addressing the demands of the Muslim community and ensuring their political representation.

• Communal Electorate

• It refers to the system of separate electorates in which voters of a particular community vote for their representatives separately.

• This system was introduced to provide political representation to minority communities.

• While it aimed to ensure fair representation, it also led to the division of society along communal lines.

• The system was later criticized for fostering communalism and was eventually abolished after India gained independence.

• Lord Minto

• He served as the Viceroy of India from 1905 to 1910.

• His tenure is particularly noted for the Morley-Minto Reforms of 1909.

• These reforms were part of the British strategy to address the growing demands for Indian participation in governance.

• Lord Minto is often criticized for introducing separate electorates, which many believe laid the foundation for communal divisions in Indian politics.

Q57. Answer: (b) Event B is the principal and immediate cause and A is its effect.

Statements:

I. Meghna is going to get a prize and a medal today.

Statement I is the effect of an event or achievement that has led to Meghna receiving a prize and a medal, which could be due to her performance or accomplishment in a specific competition or activity.

II. Meghna won the race competition today.

Statement II is the principal cause for Meghna receiving a prize and a medal, as winning the race competition would logically lead to her being rewarded with these honors.

Therefore, Meghna's achievement in winning the race (Statement II) directly results in her receiving a prize and a medal (Statement I).

Hence, Option 2 is correct because Event B is the principal and immediate cause, and Event A is its effect.

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Q58. Answer: (a) Pietra dura

The correct answer is Pietra dura.

Key Points

• Pietra dura is an inlay technique of using cut and fitted, highly polished colored stones to create images.

• This technique was widely used in the decoration of the Taj Mahal in Agra, India.

• The stones used in Pietra dura are typically hard and of high quality such as lapis lazuli, agate, jasper, and jade.

• The intricate floral and geometric designs in the Taj Mahal are a testament to the skilled craftsmanship involved in Pietra dura work.

Additional Information

• Tesserae

• Tesserae are small blocks of stone, tile, glass, or other materials used in the creation of mosaics.

• They are typically cubic in shape and are used to create intricate designs and patterns.

• This technique is more commonly seen in ancient Roman and Byzantine mosaics.

• Mosaic

• A mosaic is a piece of art or image made from the assembling of small pieces of colored glass, stone, or other materials.

• Mosaics are often used as floor and wall decoration and were particularly popular in the Roman Empire.

• Relief

• Relief is a sculptural technique where the sculpted elements remain attached to a solid background of the same material.

• The term relief is from the Latin verb "relevo," meaning to raise.

• Reliefs are categorized by their degree of projection from the background: high relief, low relief (bas-relief), and sunken relief.

Q59. Answer: (a) 831/3%

Given:

X is 6 times as large as Y.

Formula Used:

Percentage decrease = (Original Value - New Value)/(Original Value) × 100

Calculation:

Let Y = y

Then X = 6y

Percentage decrease = (6y - y)/6y × 100

Percentage decrease = 5y/6y × 100

Percentage decrease = 5/6 × 100

Percentage decrease = 831/3 %

The correct answer is option 1: 831/3 % %

Q60. Answer: (a) Amazon

The correct answer is Amazon.

Key Points

• The Amazon River is the largest river by discharge volume of water in the world.

• It has an average discharge of about 209,000 cubic meters per second (7,381,000 cubic feet per second).

• The Amazon River is approximately 4,345 miles (7,062 kilometers) long, making it one of the longest rivers in the world.

• The river flows through several countries in South America, including Brazil, Peru, and Colombia, and its basin is home to the Amazon Rainforest, the largest rainforest in the world.

Additional Information

• Nile River

• The Nile is commonly known as the longest river in the world, stretching about 6,650 kilometers (4,130 miles).

• It flows through northeastern Africa, including countries like Egypt, Sudan, and Uganda.

• The Nile has two major tributaries: the White Nile and the Blue Nile.

• It is crucial for agriculture and livelihoods in the regions it passes through, especially in Egypt.

• Indus River

• The Indus River is one of the longest rivers in the world, flowing through China (Tibet), India, and Pakistan.

• It is approximately 3,180 kilometers (1,976 miles) long.

• The river is crucial for the economy of Pakistan, especially for agriculture.

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• The Indus Valley Civilization, one of the world's oldest civilizations, developed around this river.
• Hwang Ho (Yellow River)
• The Yellow River, or Hwang Ho, is the second-longest river in China, after the Yangtze River.
• It is approximately 5,464 kilometers (3,395 miles) long.
• It is often referred to as the "cradle of Chinese civilization" as its basin was the birthplace of ancient Chinese civilizations.
• The river is known for its heavy silt load, which gives it a distinctive yellow color.

Q61. Answer: (d) 38

The logic followed here is:

Prasad ranked eleventh from the top and twenty fourth from the bottom among those who had passed in the mid-term examination in a class.

This means that the total number of students who passed the examination can be calculated by adding Prasad's rank from the top and the bottom and then subtracting 1 (since Prasad is counted twice).

Total number of students who passed = 11 + 24 - 1 = 34.

Additionally, four students had failed in the mid-term examination.

Therefore, the total number of students in the class = Total number of students who passed + Number of students who failed

= 34 + 4

= 38.

Hence, the correct answer is "Option 4".

Q62. Answer: (b) 241/2

Given:

Total Revolutions = 1000

Distance Covered = 154 km = 154,000 meters

Formula Used:

Distance Covered = Number of Revolutions × Circumference of the Wheel

Circumference of the Wheel = 2πr

where r is the radius of the wheel

Calculation:

Distance Covered = 1000 × 2πr

154,000 = 1000 × 2 × (22/7) × r

=> 154,000 = 2000 × (22/7) × r

=> 154,000 = 6280r

=> r = 154,000 / 6280

=> r = 24.5 meters

The radius of the wheel is 24.5 meters.

Q63. Answer: (a) Sister's Daughter

Given:

1) The only son of O has three daughters P, R and S.

2) Q is the daughter of L whose only sister M is the daughter-in-law of O.

Thus, S is L's niece or sister's daughter.

Hence, the correct answer is "Option 1".

Q64. Answer: (d) √2

Given:

We need to find the greatest value of sin x + cos x.

Formula Used:

We use the trigonometric identity:

sin x + cos x = √2 sin(x + (π/4))

Calculation:

We know:

sin x + cos x = √2 sin(x + (π/4))

The maximum value of sinθ is 1.

Therefore,

=> √2 sin(x + (π/4)) has a maximum value of √2 × 1

=> √2

The greatest value of sin x + cos x is √2.

The correct answer is option 4.

Q65. Answer: (c) Q125T

The logic followed here is:

Hence, "Option 3" is the correct answer.

Q66. Answer: (a) Raja Ram Mohan Roy

The correct answer is Raja Ram Mohan Roy.

Key Points

• Raja Ram Mohan Roy was a prominent Indian social reformer and the founder of the Brahmo Samaj.

• He is often regarded as the "Father of the Indian Renaissance" for his efforts to abolish the practices of sati and child marriage.

• Raja Ram Mohan Roy started the newspaper 'Sambad Kaumudi' in 1821 to promote social reforms and spread political awareness.

• He advocated for the modernization of Indian society by incorporating Western principles and scientific knowledge.

Additional Information

• Sambad Kaumudi

• 'Sambad Kaumudi' was a weekly newspaper in Bengali, published by Raja Ram Mohan Roy.

• The newspaper played a crucial role in supporting social reforms such as the abolition of sati (the practice of burning widows) and advocating for women's rights.

• The publication aimed to educate the public on important social, political, and economic issues of the time.

• It was instrumental in spreading the ideas of the Bengal Renaissance and laid the foundation for modern journalism in India.

• Brahmo Samaj

• Brahmo Samaj was a socio-religious reform movement founded by Raja Ram Mohan Roy in 1828.

• The movement aimed to reform Hinduism and eradicate social evils like caste discrimination, sati, and child marriage.

• It promoted monotheism, rationalism, and the idea of one God, rejecting idolatry and superstitions.

• The Brahmo Samaj had a significant impact on the social and religious landscape of India, encouraging progressive thinking and modern education.

• Raja Ram Mohan Roy's Contributions

• Raja Ram Mohan Roy was a key figure in the abolition of the practice of sati in 1829.

• He advocated for women's rights, including the right to education and property inheritance.

• He established the Hindu College in Calcutta (now Kolkata) in 1817, which became a center for modern education.

• He was also involved in the promotion of free press and freedom of expression in India.

• Other Reforms and Activities

• Raja Ram Mohan Roy worked towards the introduction of Western education and scientific knowledge in India.

• He was a proponent of legal reforms, including the codification of laws and the establishment of a modern judiciary system.

• He engaged in dialogues with British officials to advocate for Indian rights and self-governance.

• His efforts laid the groundwork for future social reform movements and the Indian independence struggle.

Q67. Answer: (b) 0

Given:

Equation: 1X9 + 1Y7 + 2Z8 = 424

Formula used:

We need to find the values of X, Y, and Z such that the equation is satisfied. Focus on maximizing X.

Calculation:

Start by assuming possible values for X, Y, and Z (ranging from 0 to 9).

Step 1: Rearrange the equation: 100 + X*10 + 9 + 100 + Y*10 + 7 + 200 + Z*10 + 8 = 424

Step 2: Simplify: 417 + 10X + 10Y + 10Z = 424

=> 10X + 10Y + 10Z = 7

=> X + Y + Z = 0.7 (since the sum must be an integer, the only possible values are X = 0, Y = 0, Z = 0)

Conclusion:

When X = 0, the equation is satisfied. Hence, the highest possible value of X is 0.

Q68. Answer: (b) 10

Given:

Cost price of 12 items = 1 rupee.

Gain = 20%

Formula Used:

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

Calculation:

CP of 1 item = 1 / 12 rupee

SP of 1 item = CP × (1 + 20/100)

=> SP of 1 item = (1 / 12) × (1 + 0.20)

=> SP of 1 item = (1 / 12) × 1.20

=> SP of 1 item = 1.20 / 12

=> SP of 1 item = 0.10 rupee

Number of items sold for 1 rupee = 1 / SP of 1 item

=> Number of items sold for 1 rupee = 1 / 0.10

=> Number of items sold for 1 rupee = 10

The correct answer is option 2.

Q69. Answer: (c) 6 times

Given:

Intervals at which the six bells toll: 2, 4, 6, 8, 10, and 12 seconds

Time period: 10 minutes = 600 seconds

Formula used:

To find how many times the bells toll together, we need to calculate the Least Common Multiple (LCM) of the intervals (2, 4, 6, 8, 10, 12).

The number of times they toll together in the given period is calculated by dividing the total time by the LCM.

Calculation:

LCM of 2, 4, 6, 8, 10, 12:

Prime factorization of 2 = 2

Prime factorization of 4 = 2^2

Prime factorization of 6 = 2 × 3

Prime factorization of 8 = 2^3

Prime factorization of 10 = 2 × 5

Prime factorization of 12 = 2^2 × 3

The LCM is the highest powers of all primes:

LCM = 2^3 × 3 × 5 = 120 seconds

Step 2: Calculate the number of times they toll together in 600 seconds:

After 1st time the total number of times bells toll together = 600/120

Including the 1st time the total Number of tolls = 600/120 + 1 = 5 + 1 = 6

Conclusion:

The bells will toll together 6 times in the first 10 minutes.

Q70. Answer: (b) 3 : 4

Given:

The ratio between the sale price and the cost price of an article is 7 : 4.

Formula Used:

Profit = Sale Price - Cost Price

Profit ratio to Cost Price = Profit / Cost Price

Calculation:

Let the Sale Price be 7x and the Cost Price be 4x.

Profit = Sale Price - Cost Price

Profit = 7x - 4x

Profit = 3x

Profit ratio to Cost Price = Profit / Cost Price

=> Profit ratio to Cost Price = 3x / 4x

=> Profit ratio to Cost Price = 3 / 4

The ratio between the profit and the cost price of the article is 3 : 4.

Q71. Answer: (b) Literature

The correct answer is Literature.

Key Points

• Winston Churchill was awarded the Nobel Prize in Literature in 1953.

• He received the prize for his numerous published works, especially his six-volume history of World War II.

• The Nobel Committee praised him for his "mastery of historical and biographical description" as well as his "brilliant oratory in defending exalted human values."

• Churchill's notable works include "The Second World War," "A History of the English-Speaking Peoples," and his wartime speeches.

Additional Information

• Nobel Prize in Literature

• The Nobel Prize in Literature is awarded annually by the Swedish Academy to authors, regardless of nationality, who have produced "in the field of literature the most distinguished work in an idealistic direction."

• First awarded in 1901, it is one of the five original Nobel Prizes established by the will of Alfred Nobel, the inventor of dynamite.

• The prize consists of a medal, a diploma, and a monetary award.

• Recipients of the Nobel Prize in Literature include literary giants like Rabindranath Tagore, Gabriel Garcia Marquez, and Toni Morrison.

• Winston Churchill

• Winston Churchill was the Prime Minister of the United Kingdom during World War II and again in the early 1950s.

• He is remembered for his leadership during the war and his stirring speeches, which bolstered British morale.

• In addition to his political career, Churchill was a prolific writer and historian.

• His works span a wide range of topics, including military history, politics, and his own personal experiences.

• World War II

• World War II was a global conflict that lasted from 1939 to 1945, involving most of the world's nations, including all the great powers.

• The war was marked by significant events including the Holocaust, the use of nuclear weapons, and extensive civilian and military casualties.

• Churchill's leadership and his alliance with the United States and the Soviet Union were crucial to the Allied victory.

• Churchill's detailed accounts of the war provide valuable insights into the strategies and events that shaped the outcome of the conflict.

Q72. Answer: (a) Delivery of financial services at affordable cost to the poor

The correct answer is Delivery of financial services at affordable cost to the poor.

Key Points

• Financial Inclusion aims to provide affordable financial services to disadvantaged and low-income segments of society.

• It involves ensuring access to useful and affordable financial products and services such as transactions, payments, savings, credit, and insurance.

• These services should be delivered in a responsible and sustainable way to meet the needs of individuals and businesses.

• The ultimate goal of financial inclusion is to improve the overall economic stability and empowerment of the underprivileged sections of society.

Additional Information

• Financial Services:

• These include banking, credit, insurance, and investment services that allow individuals to manage their finances and mitigate financial risks.

• Examples include savings accounts, loans, insurance policies, and retirement plans.

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• Affordable Cost:

• Financial inclusion aims to reduce the cost barriers that prevent low-income individuals from accessing essential financial services.

• Affordable cost means low or no fees for services such as account maintenance, transactions, and loans.

• Know Your Customer (KYC) Norm:

• KYC is a regulatory process where banks and financial institutions verify the identity, suitability, and risks involved with maintaining a business relationship.

• It helps prevent money laundering, fraud, and illicit activities.

• Mobile Banking:

• Mobile banking refers to the use of a mobile device to carry out financial transactions, including checking account balances, transferring funds, and paying bills.

• It is a key tool for financial inclusion, especially in regions where traditional banking infrastructure is lacking.

• Money Transfer Services:

• These services facilitate the transfer of money from one individual to another, often across different geographical locations.

• They are crucial for remittances, which are a significant source of income for many households in developing countries.

Q73. Answer: (c) Rampur

Given:

1) Of the six cities, Aliganj is bigger than Sewa Nagar.

Aliganj > Sewa Nagar

2) Sewa Nagar is smaller than Nand Nagri but bigger than Rampur.

Aliganj / Nand Nagri > Sewa nagar > Rampur

3) Hari Nagar is bigger than Nand Nagri.

Case 1) Hari Nagar > Aliganj / Nand Nagri > Sewa nagar > Rampur

Case 2) Aliganj > Hari Nagar > Nand Nagri > Sewa nagar > Rampur

4) Jaitpur is smaller than Hari Nagar but bigger than Sewa Nagar.

Case 1) Hari Nagar > Aliganj / Nand Nagri / Jaitpur > Sewa nagar > Rampur

Case 2) Aliganj > Hari Nagar > Nand Nagri / Jaitpur > Sewa nagar > Rampur

Thus, in both cases Rampur is the smallest city.

Hence, "Option 3" is the correct answer.

Q74. Answer: (d) Liu Xiaobo

The correct answer is Liu Xiaobo.

Key Points

• Liu Xiaobo was a Chinese literary critic, writer, human rights activist, and Nobel Peace Prize laureate.

• He was awarded the Nobel Peace Prize in 2010 for his long and non-violent struggle for fundamental human rights in China.

• At the time of the award, Liu Xiaobo was imprisoned in China, having been sentenced in 2009 to 11 years for "inciting subversion of state power".

• His wife, Liu Xia, was placed under house arrest shortly after the award was announced.

Additional Information

• Nobel Peace Prize

• The Nobel Peace Prize is one of the five Nobel Prizes established by the will of Alfred Nobel, the inventor of dynamite, in 1895.

• It is awarded annually by the Norwegian Nobel Committee to individuals or organizations that have made significant contributions to peace efforts.

• The prize includes a medal, a diploma, and a monetary award.

• Past laureates include prominent figures such as Martin Luther King Jr., Mother Teresa, and Malala Yousafzai.

• Human Rights Activism in China

• Human rights activism in China is a sensitive and often dangerous endeavor due to the Chinese government's strict control over political dissent and social activism.

• Activists like Liu Xiaobo have faced imprisonment, surveillance, and other forms of repression.

• Despite these challenges, many continue to advocate for democratic reforms, freedom of speech, and other basic human rights in China.

• International organizations often highlight these efforts and call for the release of imprisoned activists.

• Liu Xiaobo's Legacy

• Liu Xiaobo's legacy is marked by his commitment to non-violent protest and his advocacy for democratic reforms in China.

• His writings and activism have inspired many within China and around the world to continue the fight for human rights.

• His Nobel Peace Prize drew international attention to the plight of political prisoners in China.

• Liu Xiaobo passed away in 2017 while still in custody, but his work continues to influence human rights movements globally.

Q75. Answer: (b) 15 October

The correct answer is Tue Oct 15 2024 00:00:00 GMT+0530 (India Standard Time).

Key Points

• National Women's Farmer's Day, also known as Rashtriya Mahila Kisan Diwas, is celebrated in India on October 15th every year.

• The day aims to recognize and honor the contribution of women farmers in the agriculture sector.

• Women farmers constitute nearly 33% of the agricultural labor force and 48% of the self-employed farmers in India.

• The Ministry of Agriculture and Farmer's Welfare of India organizes events and programs to highlight the achievements and challenges of women farmers on this day.

Additional Information

• Importance of Women in Agriculture:

• Women play a vital role in various agricultural activities such as sowing, weeding, harvesting, and post-harvest management.

• They also contribute significantly to livestock management and dairy production.

• Despite their crucial role, women farmers often face challenges such as limited access to resources, land, and credit facilities.

• Initiatives for Women Farmers:

• The Indian government has launched several schemes to support women farmers, including the Mahila Kisan Sashaktikaran Pariyojana (MKSP).

• MKSP aims to empower women in agriculture by promoting sustainable agricultural practices and enhancing their participation in decision-making processes.

• Other initiatives include training programs, financial support, and the formation of women self-help groups (SHGs).

• Challenges Faced by Women Farmers:

• Limited access to land ownership and inheritance rights.

• Inadequate access to credit and financial services.

• Limited availability of training and extension services tailored to women’s needs.

• Socio-cultural barriers and gender biases in the agricultural sector.

• Global Perspective:

• Globally, women constitute a significant portion of the agricultural workforce, especially in developing countries.

• International organizations such as FAO and UN Women advocate for gender equality in agriculture and the empowerment of women farmers.

• These organizations emphasize the need for inclusive policies and programs to address the unique challenges faced by women in agriculture.

Q76. Answer: (d) 14

The logic followed here is:

Logic: 1st number × (1st number ÷ 2) = 2nd number.

Now,

For, 12 : 72

=> 12 × (12 ÷ 2)

=> 12 × 6 = 72.

Similarly, for ? : 98

=> 14 × (14 ÷ 2)

=> 14 × 7 = 98.

Hence, the correct answer is "Option 4".

Q77. Answer: (b) 231

Given:

Numbers: 313, 231, 241, 211

Formula Used:

A prime number is a natural number greater than 1 that has no positive divisors other than 1 and itself.

Calculation:

Check the divisibility of each number:

313: Not divisible by any number other than 1 and 313

231: Check divisibility by 3:

Sum of digits = 2 + 3 + 1 = 6

6 is divisible by 3

=> 231 is divisible by 3

=> 231 is not a prime number

241: Not divisible by any number other than 1 and 241

211: Not divisible by any number other than 1 and 211

The correct answer is option 2.

Q78. Answer: (d) Kidney

The correct answer is Kidney.

Key Points

• The kidney is part of the urinary system, whereas the liver, stomach, and large intestine are part of the digestive system.

• The primary function of the kidney is to filter blood to produce urine, which is different from the digestive functions of the liver, stomach, and large intestine.

• Kidneys help in maintaining the body's fluid and electrolyte balance, which is not a primary function of the liver, stomach, or large intestine.

• The liver, stomach, and large intestine are involved in processing food and nutrients, while the kidney is involved in excreting waste products from the blood.

Additional Information

• Liver

• The liver is a vital organ that performs various functions including detoxification, protein synthesis, and production of biochemicals necessary for digestion.

• It produces bile, which is important for digestion of fats.

• The liver also stores glucose and helps in regulating blood sugar levels.

• Stomach

• The stomach is a muscular organ located on the left side of the upper abdomen.

• It secretes acid and enzymes that digest food.

• The stomach muscles contract periodically, churning food to enhance digestion.

• Large Intestine

• The large intestine absorbs water and salts from the material that has not been digested as food, and is responsible for the formation of solid waste (feces).

• It includes the cecum, colon, rectum, and anal canal.

• It is also involved in the absorption of vitamins produced by gut bacteria.

• Kidney

• Kidneys are bean-shaped organs located on either side of the spine, below the ribs and behind the belly.

• They filter blood to produce urine, which is then excreted from the body.

• They help in the regulation of electrolytes, maintenance of acid-base balance, and regulation of blood pressure.

• The kidneys also produce hormones that are essential for the production of red blood cells and the regulation of calcium metabolism.

Q79. Answer: (a) 10.36

Given:

Data: 8.2, 9.5, 10.3, 11.4, 12.4

Formula Used:

Mean = (Sum of all data points) / (Number of data points)

Calculation:

Sum of all data points = 8.2 + 9.5 + 10.3 + 11.4 + 12.4

Sum of all data points = 51.8

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Number of data points = 5

Mean = 51.8 / 5

=> Mean = 10.36

The mean for the given data is 10.36.

Q80. Answer: (d) Talcher – Assam

The correct answer is Talcher – Assam.

Key Points

• Neyveli Thermal Power Plant is located in Tamil Nadu.

• Panki Thermal Power Plant is located in Uttar Pradesh.

• Korba Thermal Power Plant is located in Chhattisgarh.

• Talcher Thermal Power Plant is actually located in Odisha, not Assam.

Additional Information

• Thermal Power Plants:

• A thermal power plant is a power station where heat energy is converted to electric power. In most of the places in the world, the turbine is steam-driven.

• Water is heated, turns into steam, and spins a steam turbine which drives an electrical generator.

• After it passes through the turbine, the steam is condensed in a condenser and recycled to where it was heated; this is known as a Rankine cycle.

• Neyveli Thermal Power Plant:

• It is one of the largest thermal power stations in India and is located in Tamil Nadu.

• It is run by Neyveli Lignite Corporation Limited (NLC).

• Panki Thermal Power Plant:

• Located near Kanpur in Uttar Pradesh, it is an important source of electricity for the state.

• It is operated by Uttar Pradesh Rajya Vidyut Utpadan Nigam Ltd (UPRVUNL).

• Korba Thermal Power Plant:

• Located in Korba, Chhattisgarh, it is one of the major power plants in the state.

• It is operated by National Thermal Power Corporation (NTPC).

• Talcher Thermal Power Plant:

• Located in Talcher, Odisha, it is operated by NTPC.

• It is one of the oldest thermal power plants in India.

Q81. Answer: (d) Panda

The correct answer is Panda.

Key Points

• Panda is a type of antivirus software, not an internet browser.

• Antivirus software is designed to detect, prevent, and remove malicious software from computers and networks.

• Examples of other antivirus software include Norton, McAfee, and Kaspersky.

• Internet browsers, such as Safari, Firefox, and Chrome, are used to access and navigate the World Wide Web.

Additional Information

• Safari

• Safari is a web browser developed by Apple Inc.

• It is the default browser on Apple devices such as iPhones, iPads, and Mac computers.

• Safari is known for its speed and energy efficiency.

• It supports modern web standards and has features like Intelligent Tracking Prevention to enhance user privacy.

• Firefox

• Firefox is a free and open-source web browser developed by the Mozilla Foundation.

• It is known for its strong privacy features and customization options.

• Firefox supports various add-ons and extensions that enhance browser functionality.

• It is available on multiple platforms including Windows, macOS, Linux, and mobile devices.

• Chrome

• Google Chrome is a cross-platform web browser developed by Google.

• It is the most widely used web browser worldwide.

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• Chrome is known for its speed, simplicity, and security features.
• It supports a wide range of extensions and integrates seamlessly with other Google services.
• Antivirus Software
• Antivirus software is designed to protect computers from malware, viruses, and other malicious threats.
• It scans files and programs for known threats and removes or quarantines them to prevent damage.
• Modern antivirus software often includes additional features such as firewalls, email protection, and web browsing security.
• Examples of popular antivirus software include Panda, Norton, McAfee, and Kaspersky.

Q82. Answer: (b) 14.3

Given:
Mode = 12.5
Mean = 15.2
Distribution is moderately asymmetrical
Formula Used:
For a moderately asymmetrical distribution, the relationship between mean, median, and mode is given by:
Mean - Mode = 3(Mean - Median)
Calculation:
Given:
Mean = 15.2
Mode = 12.5
Using the formula:
Mean - Mode = 3(Mean - Median)
Substitute the values:
15.2 - 12.5 = 3(15.2 - Median)
Simplify:
2.7 = 3(15.2 - Median)
=> 2.7 = 45.6 - 3 × Median
=> 3 × Median = 45.6 - 2.7
=> 3 × Median = 42.9
=> Median = 42.9 / 3
=> Median = 14.3
The median of the distribution is 14.3.

Q83. Answer: (b) 11

The correct answer is 11.
Key Points
• The original Constitution of India did not contain Fundamental Duties.
• Fundamental Duties were added by the 42nd Amendment Act, 1976, on the recommendations of the Swaran Singh Committee.
• Initially, there were 10 Fundamental Duties enumerated in Article 51A of the Constitution.
• The 86th Amendment Act, 2002, added one more Fundamental Duty, raising the total to 11.
Additional Information
• Fundamental Duties:
• Fundamental Duties are moral obligations of all citizens to help promote a spirit of patriotism and to uphold the unity of India.
• They are included in Part IV-A of the Constitution.
• The Fundamental Duties are not enforceable by law, but they are essential for the overall development of the country.
• 42nd Amendment Act, 1976:
• Known as the "Mini Constitution" due to its wide-ranging impact.
• Introduced significant changes to the Constitution, including the addition of Fundamental Duties.
• 86th Amendment Act, 2002:
• Made education a Fundamental Right for children aged 6 to 14 years under Article 21A.
• Added a new Fundamental Duty under Article 51A (k) which states that a parent or guardian must provide opportunities for education to their child or ward between the age of six and fourteen years.

• Swaran Singh Committee:
• Set up by the Government of India in 1976 to recommend changes to the Constitution.
• Its recommendations led to the inclusion of Fundamental Duties in the Constitution.

Q84. Answer: (a) SLV–3

The correct answer is SLV–3.

Key Points

• The Satellite Launch Vehicle-3 (SLV-3) was the first satellite launch vehicle developed by India.
• SLV-3 was developed by the Indian Space Research Organisation (ISRO) under the guidance of Dr. A.P.J. Abdul Kalam.
• The first successful launch of SLV-3 took place on July 18, 1980, which placed the Rohini satellite into orbit, making India the sixth country to have satellite launch capabilities.
• The development of SLV-3 was a significant milestone in India's space program, marking the beginning of indigenous satellite launch capabilities.

Additional Information

• ASLV (Augmented Satellite Launch Vehicle)
• ASLV was designed to augment payload capacity compared to SLV-3.
• It was used to place satellites into low Earth orbit (LEO).
• ASLV had a mixed record of success and was eventually phased out in favor of more advanced launch vehicles.
• GSLV (Geosynchronous Satellite Launch Vehicle)
• GSLV is designed to launch heavier payloads into geostationary orbits.
• It uses a cryogenic upper stage, which enhances its payload capacity.
• GSLV is crucial for launching communication satellites.
• PSLV (Polar Satellite Launch Vehicle)
• PSLV is known for its reliability and versatility.
• It is used to launch satellites into polar orbits and geostationary transfer orbits.
• PSLV has been instrumental in launching numerous Indian and foreign satellites.

Q85. Answer: (a) PSLV–C11

The correct answer is PSLV–C11.

Key Points

• PSLV–C11 is a version of India's Polar Satellite Launch Vehicle (PSLV).
• Chandrayaan–1, India's first lunar probe, was launched successfully by PSLV–C11 on 22 October 2008.
• PSLV–C11 was developed by the Indian Space Research Organisation (ISRO).
• This mission marked India's entry into lunar exploration and demonstrated its capability to launch and manage complex missions.

Additional Information

• GSLV (Geosynchronous Satellite Launch Vehicle)
• GSLV is another type of launch vehicle developed by ISRO designed to launch heavier payloads into geostationary orbits.
• It is used primarily for deploying communication satellites.
• GSLV Mk III
• GSLV Mk III, also known as LVM3, is the heaviest and most powerful rocket developed by ISRO.
• It is capable of carrying large payloads and was used for the Chandrayaan–2 mission.
• RLV–TD (Reusable Launch Vehicle-Technology Demonstrator)
• RLV–TD is an experimental project by ISRO to develop technologies for a reusable space launch vehicle.
• The aim is to reduce the cost of access to space.
• Chandrayaan–1
• Chandrayaan–1 was India's first mission to the moon and aimed at high-resolution remote sensing of the lunar surface.
• The mission was instrumental in confirming the presence of water/hydroxyl on the moon.

Q86. Answer: (d) HCWYBO

The logic followed here is:

'WGHLTY' is written as 'TOGCBR'

Similarly,

'TGDBHM' is written as

Hence, "Option 4" is the correct answer.

Q87. Answer: (b) Only (II) follows.

Given:

Statement: Many cases of children's death are reported from AES (Acute Encephalitis Syndrome) in Muzaffarpur district of Bihar.

Course of Action:

I. The question should be raised in the legislative assembly and the health minister's resignation should be demanded with immediate effect - False (Because, demanding the health minister's resignation does not directly address the immediate health crisis or provide a solution to the problem).

II. A team of doctors should be rushed to the affected areas - True (Because, sending a team of doctors to the affected areas directly addresses the immediate need for medical intervention and could help save lives).

So, Only II follows.

Hence, the correct answer is "Option 2".

Q88. Answer: (a) YAY

The logic followed here is:

Hence, "Option 1" is the correct answer.

Q89. Answer: (c) Pathology

The logic followed here is:

Logic: Field of Study related to a specific subject.

Here,

Animal : Zoology → Zoology is the field of study related to Animals.

Similarly,

Disease : Pathology → Pathology is the field of study related to Diseases.

Hence, the correct answer is "Option 3".

Q90. Answer: (b) 7749

The logic followed here is:

5273 is written as 3455

Similarly,

9567 is written as

Hence, "Option 2" is the correct answer.

Q91. Answer: (b) 31

The logic followed here is:

Position of Raj from the left = 16th

Position of Raj from the right = 16th

So,

Total number of students = Position of Raj from the left + Position of Raj from the right - 1

= 16 + 16 - 1

= 32 - 1 = 31.

Hence, the correct answer is "Option 2".

Q92. Answer: (b) 139

The logic followed here is:

Hence, "Option 2" is the correct answer.

Q93. Answer: (b) Hear

The logic followed here is:

Logic: Sense associated with perception.

Here,

Beauty : See → Beauty is perceived through the sense of seeing.

Similarly,

Melody : Hear → Melody is perceived through the sense of hearing.

Hence, the correct answer is "Option 2".

Q94. Answer: (c) Carpenter

The logic followed here is:

Logic: Occupations associated with products.

Here,

Building : Mason → Mason is an occupation associated with building.

Similarly,

Furniture : Carpenter → Carpenter is an occupation associated with furniture.

Hence, the correct answer is "Option 3".

Q95. Answer: (c) VBOVB

The logic followed here is:

INDUS is written as TOYHJ

Similarly,

GANGA is written as

Hence, "Option 3" is the correct answer.

Q96. Answer: (a) Third

Given: Five coaching classes P, Q, R, S, and T are located on five different floors, numbered 1 to 5. Each coaching class teaches only one subject out of Physics, Chemistry, Mathematics, Biology, and English.

1) Coaching Class R is on the third floor, and Chemistry is taught in Coaching Class P.

2) Biology is taught in Coaching Class S, while English is not taught in Coaching Class Q.

Coaching Classes	Subject	Floor
P	Chemistry	
Q	English	
R		3
S	Biology	
T		

3) Neither English nor Physics is taught in the coaching class located on the third floor.

As English is not taught neither in Coaching Class Q nor on the third floor, therefore only coaching class left for English is T.

After positioning English, only possible coaching class left for Physics is Q.

After positioning Physics only one position is left in subjects, which will be occupied by the only subject left i.e. Mathematics.

Coaching Classes	Subject	Floor
P	Chemistry	
Q	Physics	
R	Mathematics	3
S	Biology	
T	English	

4) Physics is taught in the coaching class located on the fifth floor.

As floor of subjects Chemistry, Biology and English is not known yet, therefore all of them are taught on either or the floors i.e. 1, 2 or 4.

Coaching Classes	Subject	Floor
P	Chemistry	1 / 2 / 4
Q	Physics	5
R	Mathematics	3

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S	Biology	1 / 2 / 4
T	English	1 / 2 / 4

Thus, according to the final arrangement, on third floor Mathematics is taught.

Hence, "Option 1" is the correct answer.

Q97. Answer: (b) Husband's Brother

Given:

1) R's mother L has two sisters X and Y.

2) Q is the paternal uncle of R and N is R's father.

1) N's father O has two children.

Thus, Q is L's brother-in-law or husband's brother.

Hence, the correct answer is "Option 2".

Q98. Answer: (c) Intel

The logic followed here is:

Printer	Peripheral Device
Keyboard	Peripheral Device
Intel	Processor Manufacturer
Motherboard	Computer Component

Printer, Keyboard, and Motherboard are all computer components or peripheral devices,

Whereas,

Intel is a company that manufactures processors and is not a direct component or peripheral device itself.

Hence, the correct answer is "Intel".

Q99. Answer: (b) 427

Then logic followed here is:

Logic 1st number + 3rd number = 2nd number

Option 1) 583 → 5 + 3 = 8

Option 2) 427 → 4 + 7 = 11 ≠ 2.

Option 3) 275 → 2 + 5 = 7

Option 4) 671 → 6 + 1 = 7

Hence, the correct answer is "Option 2".

Q100. Answer: (a) GFIMRK

The logic followed here is:

'PICKLE' is written as 'KRXPOV'

Similarly,

'TURNIP' is written as

Hence, "Option 1" is the correct answer.

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