STAFF SELECTION COMMISSION COMBINED GRADUATE LEVEL (TIER-I)

SOLVED PAPER

Time Allotted. 1 hour

(13th April 2022: Shift-1)

Max marks: 200

			1111X IIIIIX5: 200
	General Intelligence and Reasoning	8.	Five friends, H, I, J, K and L, are top rank holders of a school. The rank of H is just above the rank of K and just
1.	Select the number from the given options that can replace the question mark (?) in the following series. 24, ?, 52, 312, 320 1, 42, 2, 35, 3, 30, 4, 48	9.	below the rank of L. I is at the top rank and J is not at the lowest rank. Who among them is at the lowest rank? 1. M 2. L 3. K 4. J Which two signs should be interchanged to make the
2.	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) the statements. Statements: All employees are tax payers. Some employees are farmers. Some farmers are doctors. Conclusions: I. No farmer is a tax payer. II. Some farmers are tax payers. 1. Only conclusion II follows. 2. Only conclusion I follows. 3. Both conclusions follow. 4. Fither conclusions follow.	10. 11. 12.	given equation correct? $28 + 14 \times 7 \div 5 - 18 = 20$ 1. \div and $+$ 2. \div and $-$ 3. $+$ and \times 4. \div and \times Which two signs need to be interchanged to make the following equation correct? $72 \times 18 \div 9 + 19 - 39 = 16$ 1. $-$ and \times 2. $+$ and \times 3. $-$ and $+$ 4. \div and \times In a certain code language, 'POTATO' is coded as 32-30- 40-2-40-30 and 'TURNIP' is coded as 40-42-36-28-18-32. How will 'RADISH' be coded in that language? 1. 36-1-4-19-16 2. 18-2-4-19-18 3. 18-1-8-38-18 4. 36-2-8-38-16 Study the given pattern carefully and select the number from the given options that can replace the question mark (?) in it. 15. 81 12.
3.	Select the letter-cluster from the given options that can replace the question mark (?) in the following series. ECDR, BGYW, YKTB, VOOG, ?, PWEQ		18 99 15 17 120 ?
4.	1. SSJL 2. RSIL 3. SRJL 4. SSKM Four letter-clusters have been given, out of which three are alike in some manner and one is different. Select the	13.	1. 11 2. 13 3. 9 4. 16 Select the option in which the given figure is embedded (rotation is NOT allowed).
5.	1. BUMD 2. WPHY 3. MFXO 4. GZSH Two orientations of a dice are shown. This dice can be obtained by folding which of the option figures along the	14	1. 2. 3. 4. 4.
	II I I II I. VI VI V IV V	14.	the three games — snooker, chess and tennis. 42 students play snooker, 49 play tennis, and 43 play chess. The total number of students who play only two games is 29. 5 students play all the three games. The number of students who play only snooker and chess is equal. 11 students play



6. Select the option that is related to the third term in the same way as the second term is related to the first term. IVORY : ZWSPJ :: CREAM : ?

2. NFDOB 3. DSFCN 4. SNFDB 1. BODZL

- 7. Select the correct option that indicates the order of the given words as they would appear in an English dictionary. 1. magnetic **2.** magnify **3.** magnet
 - 4. magical 5. majesty
 - **1.** 4, 3, 2, 1,5 **2.** 4, 3, 1,2, 5 **3.** 4, 1, 3, 2, 5 **4.** 3, 1,4, 2, 5

- only snooker and tennis. 6 students play only snooker and chess. How many students play only tennis? 2. 23 **1.** 21 3.20 4.22
- 15. In a certain code language, 'this is fact' is written as 'cuz duz ruz', 'fact is fictional' is written as 'guz ruz cuz', and 'doubt is clear' is written as 'cuz kuz buz'. How will 'this is fictional' be written in that language?
 - 1. duz guz ruz 3. kuz guz ruz
- 2. duz buz cuz 4. duz guz cuz
- 16. The sequence of folding a piece of paper (figure i) and the manner in which the folded paper

has been cut (figure ii) is shown in the following figures. Select the option that would most closely resemble the unfolded form of figure (ii).



 Select the Venn diagram that best illustrates the relationship between the following classes. Athletes, Boys, Students

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

27:576::19:?

1. 328 **2.** 543 **3.** 256

19. Select the figure from the given options that can replace the question mark {?) in the following series.

4.498



- **20.** Pointing towards a woman, Reena said, "She is the only daughter of my father-in-law." How is the woman related to Reena?
- Sister
 Mother
 Daughter
 Sister-in-law
 Select the number from the given options that can replace the question mark (?) in the following series.

74, 74, 72, 24, ?, 4

- 22. In a certain code language, 'FOREST' is written as 'GUSITU', and 'MANGROVE' is written as 'NEOHSUWI'. How will 'REINCARNATE' be written in that language?
 1. SIOODESOEUI
 2. SFOFDESOBUI
 3. QIOQDESOEUF
 4. SIOODESOEFF
- **23.** Select the correct mirror image of the given figure when the mirror is placed at 'AB' as shown.



- 24. Two different positions of the same dice are shown, the six faces of which are numbered from 1 to 6. Select the number that will be on the face opposite to the face having the number '3'.
 1. 2 2. 1 3.6
- **25.** Which letter will replace the question mark (?) in the following letter series? E, J, N, Q, S, ?

5

4.4

4. S

5

General Awareness

- **26.** Who among the following won P4 gold at the Al Ain 2021 Para Shooting World Cup in March 2021?
 - 1. Manish Narwal2. Singhraj Adhana3. Rahul Jakhar4. Deepender Singh

27. Acidic nature of soil is shown by high concentration of

·			
I. hydrogen			2. phosphorous
3. nitrogen			4. oxygen
A 71	11	6 11	· 11 D. 1 (1

- **28.** Who among the following is the Director of 'The Nehru Centre' in London as of April 2021?
 - **1.** Amish Tripathi**2.** Chetan Bhagat
 - 3. Vikram Seth4. Amitav Ghosh
- 29. In which of the following places the difference between day and night temperatures likely to be the highest?1. Children Lake, 2. Mount Except.
 - **1.** Chilika Lake **2.** Mount Everest
- Thar Desert 4. Andaman and Nicobar Islands
 The Minimum Support Price (MSP) for which of the following Rabi crops was increased by ₹50 per quintal over the previous year, in the marketing season 2021–22?
 Barley 2. Gram 3. Safflower 4. Wheat
- **31.** The rooftop of Guru Hemkund Sahib is in the shape of an upturned
- 1. lotus 2. sunflower 3. rose 4. marigold 32. Which of the following Indian Acts was passed in the year
 - 2005?
 - **1.** The Biological Diversity Act
 - 2. The Prevention of Money-Laundering Act
 - 3. The Competition Act
 - 4. The Protection of Women from Domestic Violence Act
- **33.** The ______ radiation belts are giant swaths of magnetically trapped highly energetic charged particles that surrounds Earth.
- **1.** Van Allen **2.** Aurora **3.** Kuiper **4.** Chinook
- 34. Madagascar is located in the _____ Ocean.
- 1. Pacific2. Arctic3. Indian4. Atlantic
- **35.** received the 'Global Goalkeeper' Award by Bill and Melinda Gates Foundation for Swachh Bharat Abhiyan, on 24 September 2019.
 - 1. Ramnath Kovind 2. Narendra Modi
- **3.** Pranab Mukherjee **4.** Manmohan Singh **36.** Where in India is the 'slash and burn' agriculture known
 - as 'Kuruwa'? **1.** Western Ghats **2.** Himalayan Belt
 - **3.** State of Odisha **4.** State of Jharkhand
- 37. With a donation of ₹7,904 crore, was declared
- the most generous philanthropist in India by the 'EdelGive Hurun India Philanthropy List 2020'.
 - **1.** Azim Premji**2.** Kumar Mangalam Birla
 - **3.** Mukesh Ambani **4.** Shiv Nadar
- **38.** Which of the following events occurred first during the Indian National Movement?
 - 1. Arrival of Simon Commission
 - Partition of Bengal

3. Kheda Satyagraha 4. Dandi March

- **39.** The ______ Amendment of the Constitution of India envisages the Gram Sabha as the foundation of the Panchayat Raj System to perform functions and powers entrusted to it by the State Legislatures.
 - **1.** 71st **2.** 72nd **3.** 73rd **4.** 74th
- 40. _______ is a vocal form of music from the state of Punjab.

 1. Qawwali
 2. Ghazal
 3. Tappa
 4. Bhajan
- Dantidurga, who set up his capital at Malkhed was a ______ruler.

1. Pala	Pratihara
3. Rashtrakuta	4. Satavahana
	.1 . 11

- Badminton player _____ won the All England Open men's single title in March 2021.
 - 1. Lee Chong Wei 2. Momota Kento
 - 3. Viktor Axelsen 4. Lee Zii Jia
- **43.** As per the Economic Survey 2020–2021, India's real GDP is estimated to grow by _____ in financial year 2021–22.

1.3%	2. 11%	3.7%	4. 9%
44. The range of	of for	ce is of the or	der of 10 ⁻¹⁶ m.
1. electrom	agnetic	gravita	tional
3. strong n	uclear	4. weak r	nuclear
45. Which of t	he following A	mendments	to the Constitution
of India y	was passed v	vith the pr	imary objective to
constitutio	nally encode	the re-orga	nisation of Indian
States base	d on language	?	
1. Tenth Aı	nendment	2. Sixth A	mendment
Seventh	Amendment	4. Fourth	Amendment
46. In the Rigv	edas, there is a	a hymn in th	e form of a dialogue
between S	age Vishvamit	ra and the t	wo rivers that were
worshippe	d as goddesse	s. Which are	these rivers?
 Alakana 	nda and Bhagi	rathi	
2. Ravi and	l Chenab	3. Ganga	and Yamuna
4. Beas and	l Sutlej		
47. Who amon	g the followin	g was the firs	st Dr Shanti Swarup
Bhatnagar	awardee?		
1 MN Sah	a	2. KS Kris	shnan
3. CV Ram	an	4. S Char	idrasekhar
48. The	aims to p	rovide tap v	vater connection to
every rura	home by 2024	e.	1
1. Jal Krani	h Abhiyan	2. Jal Sha	kti Abhiyan
3. Atal Bhu	ijai rojana	4. Jai Jeev	an Mission
49. As per Uni	on Budget 202	1-22, Fiscal d	effcit is estimated at
p	er cent of GDI	2021-22.	4 7 2
1. 5.1	2. 6.8	3.7.6	4. 7.2
50 1	eters to an er	nvironment i	in which oxygen is
readily ava	naple.	a A	1 :
1. Anthrop	ogenic	2. Anaero	DD1C

2. Anaerobic 4. Acidification

Quantitative Aptitude

51. 13, *a*, *b*, *c* are four distinct numbers and the HCF of each pair of numbers (13, *a*); (13, *b*); (13, *c*) is 13, where *a*, *b*, *c* are

each less than 60 and a < b < c. What is the value of $\frac{a+c}{c}$?

3.5 1. 3.5 2.2 4. 4.5

52. A train covers a distance of 225 km in $2\frac{1}{2}$ hours with a

uniform speed. The time taken, in hours, to cover a distance of 450 km with the same speed is: 2.4 1.5 3.3 4.6

- **53.** In \triangle ABC, D is a point on side BC such that \angle ADC = \angle BAC. If CA = 12 cm CD = 8 cm, then CB (in cm) = ?
- **2.** 12 3.15 4.10 1.18 54. Find the value of the following expression:

$$\tan^3 45^\circ + 4\cos^3 60^\circ$$

$$2\cos^2 45^\circ - 3\sec^2 30^\circ + \sin 30^\circ$$

4.3

1.
$$\frac{3}{4}$$
 2. $1 + \sqrt{2}$ 3. $\frac{4}{3}$

55. A, B and C starts a business. A invests $33\frac{1}{3}$ % of the total

capital. B invests 25% of the remaining and C, the rest. If the total profit at the end of the year is ₹2,19,000, then A's share (in ₹) is:

1.65,000 3.73,000 4. 79,000 2. 71,000

56. Chords AB and CD of a circle, when produced, meet at the point P. If AB = 6.3 cm, BP = 4.5 cm, and CD = 3.6 cut, then the length (in cm) of PD is:

1. 4.8 cm 2. 3.5 cm 3.3.1 cm 4. 5.4 cm

- 57. The average of five numbers is 30. If one number is excluded, the average becomes 31. What is the excluded number?
 - 1.26 2.24 3.31 4.30

58. A cylindrical vessel of diameter 32 cm is partially filled with water. A solid metallic sphere of radius 12 cm is dropped into it. How much water level increases in the vessel (in cm)?

1.9 2.72 3.27 4. 2.25 **59.** If $5\sin \theta - 4\cos \theta = 0$, $0^{\circ} < \theta < 90^{\circ}$, then the value of $5\sin\theta + 2\cos\theta$ $5\sin\theta + 3\cos\theta$

1.
$$\frac{4}{7}$$
 2. $\frac{6}{7}$ 3. $\frac{2}{7}$ 4. $\frac{3}{7}$

60. If the length of a diagonal of a square is (a + b), then the area of the square is:

1.
$$a^2 + b^2$$
 2. $\frac{1}{2}(a^2 + b^2) + ab$

3. $a^2 + b^2 + 2ab$ 61. The given pie charts shows montlity household expenditure of Family A and Family B under various heads. The monthly expenditures incurred for Family A and

the

1.

Family B are ₹50,000 and ₹75,000, respectively. Study the charts carefully and answer the following question:



Monthly Household Expenditure of ₹50,000 under various heads of Family A

Monthly household expenditure of ₹75,000 under various heads for Family B



If the monthly expenditures of both families are combined together, then. What will be the % of the expenditures on entertainment of both families together to the total monthly expenditures of both families ? Express your answer to the nearest integer.

62. If x + y + z = 18, xyz = 81 and xy + yz + zx = 90, then the value of $x^3 + y^3 + z^3 + xyz$ is:

63. A tea seller use to make 50% of profit by selling tea at ₹9 per cup. When the cost of ingredients increased by 25%, he started selling tea at ₹10 per cup. What is his profit percentage now?

1.
$$33\frac{2}{3}$$
 2. 25 **3.** $33\frac{1}{3}$ **4.** 30

- 64. If 4 men and 6 boys can do a work in 8 days and 6 men and 4 boys can do the same work in 7 days, then how many days will 5 men and 4 boys take to do the same work? 2.8 **3.**5 4.7 1.6
- 65. A shopkeeper allows 28% discount on the marked price of an article and still makes a profit of 20%. If he gains ₹3,080 on the sale of one article, then what is the selling price (in ₹) of the article?

1. 4,880 2. 18,480 3.18.840 4. 10,884

3. Aerobic

66. What is the value of *x*, if

$$5\left(1-\frac{x}{5}\right) - \left(5-x\right) - \frac{1}{200} \text{ of } (20-x) = 0.08?$$

1. 36 **2.** 9 **3.** 18 **4.** 24

- 67. In a triangle ABC, D and E are points on BC such AD = AEand $\angle BAD = \angle CAE$. If AB = (2p + 3), BD = 2p, AC = (3q - 1)and CE = q, then find the value of (p - q). 1.3 **2.** 4.5 3.3.6 4.2
- 68. In a circle of diameter 20 cm, chords AB and CD are parallel to each other. BC is the diameter. If AB is 6 cm from the centre of the circle, what is the length (in cm) of tire chord CD? 1.8 2.12
 - 3.20 4.16
- 69. A kite flying at a height of 120 m is attached to a string which makes an angle of 60° at horizontal. What is the length (in m) of the string?

90
$$\sqrt{3}$$
 2. 75 $\sqrt{3}$ 3. 84 $\sqrt{3}$ 4. 80 $\sqrt{3}$

70. The given pie chart represents the percentage-wise distribution of the total number of vanilla cakes and

chocolate sold cakes every day. The total mumber of cakes sold in a week = 10,500. Study the pie chart and answer the question that follows. The ratio of vanilla cakes sold to chocolate cakes sold on Friday is 4:3. If the price of one vanilla cake is ₹9 and that of one chocolate cake is ₹10,

1.



then the total amount earned (in $\overline{\mathbf{x}}$) by selling all vanilla cakes and chocolate cakes on Friday is: 1.8,900

2. 10,000 3.9,900 4. 11,000

71. Simple interest on a certain sum is one-fourth of the sum and the interest rate percentage per annum is 4 times the number of years. If the rate of interest increases by 2%, then what will be the simple interest (in ₹) on ₹5,000 for 3 years?

1. 300 2. 1,500 3.2,000 4.1,800

72. The given bar graph shows the income and expenditure (in crores ₹) of a company over 5 years from 2014 to 2018. Study the bar graph and answer the question that follows.



In which of the following years the ratio of expenditure to income is the minimum?

2. 2017 1. 2016 3.2018 4.2014

- 73. If the 9-digit number 7x79251y8 is divisible by 36, what is the value of $(10x^2 - 3y^2)$ for the largest possible value of y? 1. 490 2. 289 3.192 4.298
- 74. In a factory with 400 employees, the ratio of the number of male employees to that of female employees is 5:3. There are 87.5% regular employees in the factory. If 92%

of male employees are regular employees, then what is the percentage of regular female employees?

- 1.80% 2.78% 3.87.5% 4.85%
- 75. The following histogram shows the marks scored by 40 students in a test of 30 marks. A student has to score a minimum of 10 marks to pass the test.

How many students have passed the test and obtained less than 50% marks?



English Comprehension

- 76. Select the option that expresses the given sentence in direct speech.
 - Manan said that he had no work to do that day.
 - 1. Manan said, "I have no work to do today."
 - 2. Manan said, "I have no work to do that day."
 - 3. Manan said, "Have I no work to do today?"
 - 4. Manan says, "I had no work to do that day."
- 77. Select the most appropriate synonym of the given word. Lacuna
 - 1. Misfortune 2. Languor 3. Apathy 4. Hiatus
- **78.** Select the most appropriate antonym of the given word. Ascent
- 1. Descent 2. Patent 3. Present 4. Resent
- **79.** Select the most appropriate meaning of the given idiom. Dark horse
 - 1. An honest fellow 2. An unexpected winner
 - 4. A slow runner 3. A mean person

80. Select the correct passive voice of the given sentence.

- Preeti invited Ritu for a party.
- 1. Ritu is invited for a party by Preeti.
- 2. Ritu was invited for a party by Preeti.
- 3. Preeti has been invited for a party by Ritu.
- 4. Preeti was invited for a party by Ritu.
- 81. Select the most appropriate option to substitute the underlined segment in the given sentence. If there is no need to substitute it, select 'No substitution required'. The old lady needed love and care beyond money.
 - 1. besides 2. No substitution required
 - 3. beside 4. beneath
- 82. Select the most appropriate antonym of the given word. Clench
 - 1. Tighten 2. Clasp 3. Hold 4. Relax
- 83. Select the option that expresses the given sentence in passive voice.

The Smiths have put up a huge Christmas tree.

- 1. A huge Christmas tree has been put up by the Smiths.
- 2. A huge Christmas tree is put up by the Smiths.
- 3. A huge Christmas tree is being put up by the Smiths.
- 4. A huge Christmas tree was put up by the Smiths.

- 84. The following sentence has been divided into parts. One I imagine you have learnt a valuable lesson from this of them contains an error. Select the part that contains the experience, **didn't you?** 1. did you? 2. haven't you? error from the given options. 3. have you? **4.** No substitution required This question / is quite too / simple for me / to answer. 94. The following sentence has been split into four segments. 1. to answer 2. is quite too Identify the segment that contains a grammatical error. 3. This question 4. simple for me Your eldest sister / lives in / a big city, / does she? 85. Select the option that can be used as a one-word substitute 2. does she **1**. lives in for the given group of words. 3. a big city 4. Your eldest sister Drawings or writing scribbled on walls in public places 95. Given below are four sentences which are jumbled. Pick **1.** Graffiti **2.** Posters 3. Sketches 4. Hoardings the option that gives their correct order. 86. Select the most appropriate synonym of the given word. A. It is a park quite different from any other we have seen. Solemn B. One difference is that it is made from nearly 250 tons of **1.** Dignified **2.** Trivial 3. Excited 4. Frivolous scrap. 87. The following sentence has been divided into parts. One C. Another difference is that it is powered by wind and of them may contain an error. Select the part that contains solar energy. the error from the given options. If you don't find any D. A new park called Bharat Darshan Park has been error, mark 'No error' as your answer. thrown open to the public in New Delhi. There is a very little time / for them to prepare / for the show. 1. ACDB 2. DABC 3. BACD 4. DBCA **1.** for them to prepare 2. for the show **Comprehension:** 3. No error 4. There is a very little time In the following passage, some words have been deleted. 88. Select the most appropriate option to fill in the blank. Read the passage carefully and select the most appropriate Harish's voice in the empty rooms of their new option to fill in each blank. house. If you thought that yoga was all about bending and twisting 2. reverted 3. resounded 4. resorted 1. relapsed your body in odd shapes, it's time to rethink. Yoga is (1) 89. The following sentence has been split into four segments. more. In very simple words, giving care (2) Identify the segment that contains a grammatical error. your body, mind and breath is yoga. Derived (3) If he wants / farther information, / send him / to me. the Sankrit word 'yuj' which means 'to unite or **1.** farther information 2. to me 5,000-year-old Indian body integrate', yoga is (4) 3. If he wants 4. send him of knowledge. Yoga is all about harmonising the body (5) 90. Select the option that can be used as a one-word substitute the mind and breath through means of various for the given group of words. breathing exercises, yoga poses (asanas) and meditation. Study of insects **96.** Select the most appropriate option to fill in blank no. 1. 2. Geology 1. Entomology 1. many 2. much 3. all 4. few 3. Ecology 4. Biology 97. Select the most appropriate option to fill in blank no. 2. 91. Select the most appropriate meaning of the given idiom. 1. on 2. to 3. at **4.** for Stone's throw 98. Select the most appropriate option to fill in blank no. 3. 2. Large hurdle 1. Short distance 1. by **2.** from 3. of **4.** out 3. Difficult problem 4. Hurt slightly 99. Select the most appropriate option to fill in blank no. 4. 92. Select the INCORRECTLY spelt word. **1.** one **3.** the 4. an 2. a 1. Aisle 2. Adorn 3. Attick 4. Altar
 - **100.** Select the most appropriate option to fill in blank no. 5.**1.** on**2.** across**3.** at**4.** with

Answer Key

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

Answers with Explanations

	General Intelligence and Reasoning	$24 \times 2 = 48$
1.	Option (4) is correct. Explanation: Given series is as follows:	48 + 4 = 52 $52 \times 6 = 312$
	24, ?, 52, 312, 320	312 + 8 = 320

93. Select the most appropriate option that can substitute the

underlined segment in the given sentence. If there is no need to substitute it, select 'No substitution required'.

2. Option (1) is correct.

Explanation:



(1) There is a relationship between farmers and taxpayers. Hence, no farmer is a taxpayer is wrong.

(2) Since all employees are tax-payers and some employees are farmers. Hence, some farmers are taxpayers.

Hence, only conclusion II follows.

3. Option (1) is correct.

Explanation:

Table of Alphabetical series (point to remember)

Alphabets	A	В	С	D	E	F	G	Η	Ι	J	K	L	Μ
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Alphabets	Z	Y	Х	W	V	U	Т	S	R	Q	Р	0	Ν
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14
Е	E C				D			F	l				
5		3				4			18	8			
▼-3		ᡟ	+4		↓ –5				┥	+5			
В		G			Y			W					
2		7			25			23					
▼-3	↓ +4				▼ -5				↓	+5	;		
Y		Κ			Т			В					
25		11			20			2					
↓ _3		¥	+4		▼ -5			+5					
V		0			0				C	, t			
22		15				15			_7	'			
▼ -3			+4		,	-5			┥	+5			
S S				J			L						
19 19				10			1	2					
▼_3	\downarrow_{+4}				▼_5			+5					
Р		W			E			Q					
16		23				5			12	7			
o													

4. Option (4) is correct. Explanation:

Alphabets	А	В	С	D	Е	F	G	Η	Ι	J	Κ	L	М
Positional	1	2	3	4	5	6	7	8	9	10	11	12	13
value													
Alphabets	Ζ	Y	Х	W	V	U	Т	S	R	Q	Р	0	Ν
Positional	26	25	24	23	22	21	20	19	18	17	16	15	14
value													

B _7 gives	U _8	M -9	D
2	21	13	4
W7 gives	P -8	H9	Y
23	16	8	25
M7 gives	F -8	X9	0
13	6	24	15
G7 gives	Z -8	S9	Н
7	26	19	8

5. Option (3) is correct. Explanation:

Find the common face in both the dice and move either in a



clockwise or anticlockwise direction. From that face

Dice 1 -----V-------------------(Alternate faces)-not opposite to each other.

Dice 2 ------ (Alternate faces)-not opposite to each other.

So, I and VI-opposite faces,

II and IV-opposite faces,

- III and IV opposite faces
- 6. Option (4) is correct.

Explanation:

Table of Alphabetical series (point to remember)

Alphabets	A	В	С	D	Е	F	G	Н	Ι	J	K	L	Μ
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Alphabets	Ζ	Y	X	W	V	U	Т	S	R	Q	Р	0	Ν
Positional	26	25	24	23	22	21	20	19	18	17	16	15	14

Now, according to the question

Ι	V	0	R	Y	
9	22	15	18	25	

Arranging the above letters "I V O R Y" in decreasing order, we get "Y V R O I"

Y	V	R	0	I	
25	22	18	15	9	
+1	+1	+1	+1	+1	
26	23	19	16	10	
Z	W	S	Р	J	

Similarly,

С	R	Е	А	М
3	18	5	1	13

Arranging the above letters "C R E A M" in decreasing order we get "R M E C A"

R	М	E	С	А
18	13	13 5		1
+1	+1	+1	+1	+1
▼ +1 S	+1 N	+1 F	▼ +1 D	▼ +1 B

7. Option (2) is correct.

Explanation:

Table of Alphabetical series (point to remember)

Alphabets	A	В	С	D	Е	F	G	Η	Ι	J	Κ	L	М
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Alphabets	Z	Υ	X	W	V	U	Т	S	R	Q	Р	0	Ν
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14
Logic: Place value of letters in the alphabetical series													

Logic: Place value of letters in the alphabetical series Hence,

Magical Magnet Magnetic Magnify Majesty

8. Option (3) is correct.

Explanation:

The rank of H is just above the rank of K and just below the rank of L.

- L Η Κ I is at the top rank and J is not the at lowest rank. Ι J L
- Η
- Κ

9. Option (4) is correct. Explanation: According to the BODMAS rule,

	В	Bracket in order (), [], {}						
	0	Of						
	D	Division (÷)						
	М	Multiplication (×)						
	А	Addition (+)						
	S	Subtraction (–)						
	(1) ÷ a	nd +						
	28 + 14	$4 \times 7 \div 5 - 18 = 20$						
	LHS, $= 28 \div 14 \times 7 + 5$. 18							
		$= 28 \div 14 \times 7 + 5 - 18$						
	=14 + 5 - 18							
	$(2) \div a$	$=19 - 18 = 1 \neq 20$						
	(2) + 43 28 + 14	$4 \times 7 \div 5 - 18 = 20$						
	LHS,							
	,	$=28 + 14 \times 7 - 5 \div 18$						
		=28 + 98 - 0.27						
		$=126 - 0.27 = 125.73 \neq 20$						
	(3) + a	nd ×						
	28 + 14	$4 \times 7 \div 5 - 18 = 20$						
	LHS,							
	$= 28 \times 14 + 7 \div 5 - 18$							
	= 3	992 + 1.4 - 18 $992 4 - 18 - 275 4 \neq 20$						
	$(4) \div at$	$75.4 - 10 - 575.4 \neq 20$						
	$(\frac{1}{28} + 14)$	$4 \times 7 \div 5 - 18 = 20$						
	LHS,							
	= 2	$28 + 14 \div 7 \times 5 - 18$						
	= 2	$28 + 2 \times 5 - 18$						
	= 2	28 + 10 - 18 = 38 - 10 = 20 = RHS						
10.	Option	(4) is correct.						
	Explan	ation:						
	В	Bracket in order (), [], {}						
	0	Of						
	D M	Division (÷)						
	A	Addition (+)						
	S	Subtraction (–)						
	(1) – an	ud ×						
	72×18	$3 \div 9 + 19 - 39 = 16$						
	LHS,							
	= 7	$72 \times 18 \div 9 + 19 - 39$						

 $= 72 - 2 + 19 \times 39$ = 72 - 2 + 741 $= 813 - 2 = 811 \neq 16 \neq RHS$ (2) + and × $72 \times 18 \div 9 + 19 - 39 = 16$ LHS, $= 72 + 18 \div 9 \times 19 - 39$ $= 72 - 2 + 19 \times 39$ = 72 + 38 - 39 $= 110 - 39 = 71 \neq 16 \neq RHS$ (3) - and + $72 \times 18 \div 9 + 19 - 39 = 16$ LHS, $= 72 \times 18 \div 9 - 19 + 39$ $= 72 \times 2 - 19 + 39$ = 144 - 19 + 39 $= 183 - 19 = 164 \neq 16 \neq RHS$ (4) \div and \times $72 \times 18 \div 9 + 19 - 39 = 16$ LHS, $= 72 \div 18 \times 9 + 19 - 39$ $= 4 \times 9 + 19 - 39$ = 36 + 19 - 39= 55 - 39 = 16 = RHS**11. Option (4) is correct. Explanation**: Table of Alphabetical series (point to remember) ABC DE F G Alphabets Η K L M Ι T Positional 1 2 3 7 9 10 11 12 13 4 5 6 8 value Alphabets ZYXWV U Т S R Q Р 0 Positional 26 25 24 23 22 21 20 19 18 17 16 15 14 value Logic: Twice of place value of letters Hence, Ρ 0 т т 0 A 20 16 15 1 20 15 ×2 ×2 ×2 ×2 ×2 **↓**×2 32 30 40 40 30 2 Т U R Ν Т Р 20 21 18 14 9 16 **↓**×2 **↓**×2 **↓**×2 **↓**×2 ×2 **↓**×2 40 42 36 28 18 32 R D S Н А 18 1 4 9 19 8 ×2 ↓×2 ×2 ×2 ×2 ×2

Ν

36 12. Option (2) is correct.

Explanation: Given that:

2

8

- 15 81 12
- 18 99 15

17 120 ?

The logic follows here:

 $(1^{st} number + 3^{rd} number) \times (1^{st} number - 3^{rd} number) =$ 2nd number

18

38

16



23. Option (2) is correct.

Explanation:

Table to remember: -

In the mirror image, left becomes right and right becomes left.

Now, the mirror image of



24. Option (2) is correct.

Explanation:

When 2 faces are common in 2 dice positions, then the 3rd face will be opposite to each other. When faces 5 and 6 are common in both dice.

Hence, 3 is opposite to 1. **25. Option (2) is correct.**

Explanation:

Table of Alphabetical series (point to remember)

Alphabets	А	В	С	D	Е	F	G	Η	Ι	J	Κ	L	М
Positional value	1	2	3	4	5	6	7	8	9	10	11	12	13
Alphabets	Ζ	Y	Х	W	V	U	Т	S	R	Q	Р	0	Ν
Positional value	26	25	24	23	22	21	20	19	18	17	16	15	14

E, J, N, Q, S, ?

E +5 gives	J +4	N +3	Q +2	S +1	Т
	•	→ —		→ —	-
5	10	14	17	19	20

General Awareness

26. Option (1) is correct.

Manish Narwal won P4 gold at the Al Ain 2021 Para Shooting World Cup in March 2021. He is an Indian Para Pistol Shooter and was also awarded the Major Dhyan Chand Khel Ratna Award 2021. Dhyan Chand Khel Ratna Award is the highest sporting honour of India and is awarded annually by the Ministry of Youth affairs and sports. He is fourth in the world in the Men's 10m Air Pistol SH1 and is supported by GoSports Foundation.

Singhraj Adhana is an Indian Paralympian and shooter from Haryana.

Rahul Jakhar is an Indian Para pistol shooter.

Deepender Singh is an Indian para pistol sport shooter from Uttar Pradesh.

27. Option (1) is correct.

Acidic nature of soil is shown by high concentration of Hydrogen ions. The alkaline nature of soil is measured by the presence of Hydroxyl ions. Acidic soil tends to reduce the fertility of soil. Farmers need to decrease the acidity by adding lime into the soil. The maximum absorption of ions in the soil happens at the pH of 6.5 to 7 which is more towards a neutral nature of soil. Soil is the uppermost layer of land that provides nutrients and water to the plants. It is composed of organic matter, gases, liquid, micro-organisms and minerals. The organic matter decomposed by microorganism is known as humus.

28. Option (1) is correct.

Amish Tripathi is the Director of 'The Nehru Centre' in London as of April 2021. The Nehru Centre aims to promote cultural exchange between India and the United Kingdom. It is regarded as a flagship cultural centre of the Indian Council for Cultural Relations (ICCR) abroad. The ICCR is an autonomous organisation of the Government of India which is headquartered in Delhi.

Amish Tripathi is best known for his Shiva Trilogy and Ram Chandra Series.

29. Option (3) is correct.

In Thar Desert, the difference between day and night temperatures is likely to be the highest.

The desert air is extremely dry and there is no water vapour in the air. Humidity content in the air works as a greenhouse to trap heat near to the earth's surface. The dry air and no proximity to water bodies leads to a dearth of humidity in that region. Thus, the heat received during the day gets lost at night leading to a high temperature difference between night and day.

Thar desert is also known as the Great Indian desert. It is an arid region that firms natural boundary between India and Pakistan. On the India side, most of the desert lies in Rajasthan, and some part lies in Gujarat, Punjab, and Haryana.

30. Option (4) is correct.

The Minimum Support Price (MSP) for wheat was increased by ₹ 50 per quintal over the previous year, in the marketing season 2021–22.

MSP is the minimum support price, which is announce by the government that pays to the farmers for their agricultural product, if the government buys the product. This price is set by the government twice a year and the Commission for Agricultural Costs and Prices (CACP) recommends the MSP of crops.

31. Option (1) is correct.

The rooftop of Guru Hemkund Sahib is in the shape of an upturned lotus. Gurudwara Hemkund Sahib is a place of worship for Sikhs and is in Chamoli district, Uttarakhand, India. The Gurdwara is devoted to the tenth Guru of Sikhs, Guru Gobind Singh.

32. Option (4) is correct.

The Protection of Women from Domestic Violence Act was passed in the year 2005. This act was brought into force by an act of Parliament. This act included physical, sexual, verbal and emotional, economic abuse in the ambit of Domestic violence. Under this act a Protection Officer is provided to the woman who has gone through any form of abuse. The Protection Officer assists the woman to avail the facilities provided by the government and the PO can be a government servant or social worker. This provides a temporary and emergency relief.

33. Option (1) is correct.

The Van Allen radiation belts are giant swaths of magnetically trapped highly energetic charged particles that surrounds Earth. These originate from solar winds and are in Earth's inner magnetic field. It mainly consists of electrons and protons and there are two such belts in Earth's Magnetosphere. These are named after James Van Allen and extend from an altitude of about 640 to 58,000 km. The magnetic field traps solar winds and thus deflecting the energy particles and protecting the atmosphere from destruction.

Aurora is the natural light display in Earth's sky and is commonly known as Polar light. These are seen in high altitude regions of Arctic and Antarctic and are caused due to disturbances in the magnetosphere caused by the solar wind. The two types of lights are aurora australis (southern lights) and aurora borealis (northern lights).

Chinook are the warm winds that blows down the eastern rocky slope of the Mountains of United States and Canada. These winds are a result of warm, moist air blowing from the Pacific Ocean in the northwest region of North America toward the Rocky Mountain range. Kuiper is a donut shaped ring of icy objects around the Sun. This extends from orbit of Neptune to the orbit of Sun. It is named after Dutch astronomer Gerard Kuiper. This belt consists of dwarf planets and some of the Solar System's moons are considered to be originated in this region.

34. Option (3) is correct.

Madagascar is located in the Indian Ocean. It is the world's second largest island country after Indonesia. Its capital is Antananarivo and the official languages are Malagasy and French. It is situated on the South-eastern coast of Africa.

35. Option (2) is correct.

Narendra Modi received the 'Global Goalkeeper' Award by Bill and Melinda Gates Foundation (BMGF) for Swachh Bharat Abhiyan, on 24th September 2019. The Swachh Bharat Mission was launched on 2nd October 2014. The phase-I of the mission focussed on declaring villages, Gram Panchayats, Districts, States and Union Territories in India 'Open-Defecation Free' (ODF) by 2nd October 2019. In the year 2019, India celebrated the 150th anniversary of Mahatma Gandhi. The phase 2 is being implemented from 2020–21 and 2024–25. This initiative was led by Parameswaran Iyer and was done under rural and urban. The rural was financed and monitored through Ministry of Jal Shakti. The urban was overseen by the Ministry of Housing and Urban Affairs.

BMGF is headquartered in Seattle, Washington DC, US and was founded by Bill Gates and Melinda French Gates.

36. Option (4) is correct.

The 'slash and burn' agriculture is known as 'Kuruwa' in the state of Jharkhand. It is a method of farming that involves cutting and burning of plants in a forest to create a field called Swidden. The cut vegetation is left to dry and then the biomass is burnt which results in a nutrient rich layer of ash that makes soil fertile. The cut vegetation is known as slash. It is known as Jhumming. The different names of 'slash and burn' agriculture are:

Bewar or Daily-Madhya Pradesh

Podu or Penda - Andhra Pradesh

Pama Dabi or Koman or Bringa- Odisha

37. Option (1) is correct.

With a donation of ₹ 7,904 crore, Azim Premji was declared the most generous philanthropist in India by the 'EdelGive Hurun India Philanthropy List 2020'. The second spot in the list was occupied by Shiv Nadar with an annual donation of ₹ 1,263 crore.

The third spot on the list was occupied by Reliance Industries Limited Chairman Mukesh Ambani and his family with an annual donation of ₹ 577 crore.

The fourth spot was occupied by Kumar Mangalam Birla and his family with a donation of ₹ 377 crores.

38. Option (2) is correct.

The first Partition of Bengal occurred happened on 16 October 1905. It was announced on 19th July 1905 by the then Viceroy of India- Lord Curzon. This was done as British considered Bengal as a large province to be singly administered. The partition led to the division into West and East Bengal, where West Bengal was a Hindu majority and East Bengal was a muslim majority region. The West Bengal, Odisha and Bihar were a part of Western region and the Eastern region included Assam and East Bengal. However, Hindus opposed the division while it was favoured by the Muslims.

This decision was reversed by King George V at Delhi Durbar on 12th December 1911.

39. Option (3) is correct.

The 73^{rd} Amendment of the Constitution of India envisages the Gram Sabha as the foundation of the Panchayat Raj System

to perform functions and powers entrusted to it by the State Legislatures. This was enacted in the year 1992 to improve local self-governance. It lead to the establishment of a three tier panchayati raj system at the village, intermediate, and district levels. This led to a uniformity in the system and there is a reservation for the SCs and STs as well. This amendment democratically decentralised authority and resources from the central government to the locally elected officials. This amendment created 11th schedule with 29 subjects which would come under the Panchayat's administration.

40. Option (3) is correct.

Tappa is a vocal form of music from the state of Punjab. It is a semi-classical vocal music that originated from the folk songs of the camel riders of Punjab. Tappa was developed as the classical music by Mian Ghulam Nabi Shori. He was a singer in the court of Nawab of Awadh.

Qawwali is a sufi style devotional music accompanied by drums and harmonium in the Islamic religion.

Ghazal is a form of poetry or ode originating in Arabic.

Bhajan is a devotional song with a religious theme or spiritual idea sung for Gods and deities.

41. Option (3) is correct.

Dantidurga, who set up his capital at Malkhed was a Rashtrakuta ruler. He is the founder of Rashtrakuta dynasty. Malkhed was originally known as Manyakehta and is situated in the present day Karnataka. He defeated the Chalukyas and earned the title of Rajadhiraja and Parameshvara.

Pala dynasty was founded by Gopala and they were staunch supporters of Mahayana Buddhism. They ruled from 8th to 12th century in the Indian states of Bengal and Bihar.

Pratihara dynasty was founded by the King Harichandra in Jodhpur (southwestern Rajasthan). They are known as Gurjara-Pratiharas and they ruled over the area of western India and the Upper Gangetic plains till the middle of the 10th century.

Satavahana dynasty was founded by Simuka and they ruled in Deccan and in Central India. They had two capitals at one time-Amaravati and Pratishthana (Paithan).

42. Option (4) is correct.

Badminton player Lee Zii Jia won the All England Open men's single title in March 2021. He is from Malaysia and defeated Japan's Nishimoto Kenta. All England Open men's single is the world's oldest Badminton tournament held annually in England.

Viktor Axelsen is a Danish badminton player.

Lee Chong Wei a Malyasian Badminton player.

Kento Momota is a Japanese badminton player.

43. Option (2) is correct.

As per Economic Survey 2020–2021, India's real GDP is estimated to grow by 11% in financial year 2021–22. GDP stands for Gross Domestic Product. It is the total value of the final goods and services produced within the geographical boundaries of a country. The real GDP is the most accurate indicator of country's economy as it takes into account the inflation and its effect. Real GDP takes into consideration the base year while calculating the inflation.

Nominal GDP is also known as Current Dollar GDP. It measures value of all the goods and services produced by an economy at current market prices in a Financial Year.

44. Option (4) is correct.

The range of weak nuclear force is of the order of 10–16. It appears only in certain processes such as radioactive decay and neutrino interactions. It causes beta decay where there is a conversion of neutron into proton, electron, and antineutrino. The other three fundamental forces of nature are

 Strong force: It is very attractive and binds protons and neutrons inside the nucleus. This comes into picture when the distance between nucleons is less than 10–15 m or 1 ferimeter.

- 2. Electromagnetic force acts over large distances and do not need a medium for the same. It causes electric and magnetic effects. It operates among the charged particles.
- **3.** Gravitational force is the weakest force and has infinite range. This force exists between two objects because of their masses.

45. Option (3) is correct.

The Seventh Amendment to the Constitution of India was passed with the primary objective to constitutionally encode the re-organisation of Indian States based on language. This led to the doing away with the classification of A, B, C, and D categories and introduced the Union Territories. It is known as State Reorganisation Act, 1956 officially and established 14 states and 5 centrally administered territories. The amendment allowed two or more states to have same governor as well.

The sixth amendment of the Constitution of India made way for taxes to be levied by the Central government on inter-state sales and purchase goods other than newspapers.

The tenth amendment of the Constitution of India amended the first schedule of Constitution. It incorporated Dadra and Nagar Haveli as the seventh Union Territory of India.

46. Option (4) is correct.

In the Rigvedas, there is a hymn in the form of a dialogue between Sage Vishvamitra and two rivers that were worshipped as goddesses are Beas and Sutlej. Rigvedas is one of the four sacred Hindu texts and it is the oldest known Vedic Sanskrit text.

Beas is a river in North India and rises in Himachal Pradesh and mouths into the Sutlej river in Punjab.

Sutlej river flows through Himachal Pradesh and Punjab in India. It is also known as Satadru. The Bhakra dam is built around the river.

Alaknanda and Bhagirathi rivers are the two headstreams of Ganges and they meet at Devprayag, in Tehri Garhwal District, Uttarakhand.

The Indus River system which is one of the three rivers of the Himalayan river systems, and it comprises of Jhelum, Chenab, Ravi, Beas, and Sutlej.

47. Option (2) is correct.

KS Krishnana was the first Dr Shanti Swarup Bhatnagar awardee in the year 1958. He was awarded for his work on Raman Scattering in the category of Physical sciences. He received this award along with CV Raman.

The Shanti Swarup Bhatnagar Prize for Science and Technology was constituted by the Council of Scientific and Industrial Research in honor of Shanti Swarup Bhatnagar in the year 1958. Shanti Swarup is referred as the father of research laboratories in India and was the first director general of CSIR.

S Chandrasekhar was an Indian-American theoretical physicist and was awarded Nobel Prize in Physics in the year 1983 for theoretical studies of the physical processes of importance to the structure and evolution of the star.

MN Saha was an Indian astrophysicist and developed Saha ionisation equation.

48. Option (4) is correct.

The Jal Jeevan Mission aims to provide tap water connection to every rural home by 2024. This mission was launched in the year 2019 and envisages supply of 55 litres of water per day and per person through Functional Household Tap Connections (FHTC). This is covered under the ambit of Jal Shakti ministry. Recently, a mobile application for the Jal Jeevan Mission was also launched. This mobile application will provide details of water infrastructure, an Aadhaarverified data set of beneficiaries, and water quality and contamination-related information for each village.

49. Option (2) is correct.

As per Union Budget 2021–22, Fiscal deficit is estimated at 6.8% per cent of GDP in 2021–22. Fiscal deficit is the condition in which the expenditure of the government supersedes the revenue in a financial year. It is calculated in absolute terms and as a percentage of country's Gross Domestic Product (GDP).

Fiscal deficit = Total revenue - total expenditure

Where Total revenue = Direct and indirect taxes levied by the Central government and non-taxable income from external grants, interest receipts, dividends and profits, receipts from Union Territories, among others.

Total expenditure = Payments of salaries, pensions, emoluments, creation of assets, funds for infra-structure, development, health and numerous other sectors.

In order to balance out the fiscal deficit, the government issues and sells bonds through banks.

50. Option (1) is correct.

Aerobic refers to an environment in which oxygen is readily available. Aerobic respiration is the cellular respiration that takes place in the presence of oxygen to produce energy from food.

Glucose + Oxygen = Carbon Dioxide + Water + Energy (ATP). ATP stands for Adenosine Tri Phosphate. This form of respiration takes place in all the multicellular organisms.

Anaerobic respiration takes place in the absence of oxygen and is performed by some bacteria and archaea. Fermentation by yeast is an example of anaerobic bacteria.

Anthropogenic are the activities that are produced or caused by humans. This word is usually used in a negative way. Acidification is the reduction of pH over a prolonged period of time.

Quantitative Aptitude

51. Option (2) is correct.

Given numbers are 13, *a*, *b*, and *c*

a, *b*, *c* should be multiple of 13 as the HCF is 13 and these numbers are less than 60.

The HCF of 13 and $a = 13 \Rightarrow a = 26$

The HCF of 13 and
$$b = 13 \Rightarrow b = 39$$

The HCF of 13 and
$$c = 13 \Rightarrow c = 52$$

Now,
$$\frac{a+c}{b} = \frac{26+52}{39} = 2$$

$$\therefore$$
 Value of $(a + c)/b$ is 2

52. Option (1) is correct.

We have, Speed = Distance/Time

:. Speed of train =
$$\frac{225}{2\frac{1}{2}} = \frac{225}{\frac{5}{2}} = 90 \text{ km/h}$$

$$\therefore$$
 Time taken to cover 450 km = $\frac{450}{90}$ = 5 h

- 53. Option (1) is correct.
 - As per the given, figure will be $\angle ADC = \angle BAC$, CD = 8 cm and AC = 12 cmIn $\triangle ABC \text{ and } \triangle ADC$, $\angle ACB = \angle ACD$ $\angle BAC = \angle ADC$ $\Rightarrow \qquad \angle ABC = \angle DAC$ So, $\triangle ABC \sim \triangle DAC$ ADC = ADC ADC = ADCADC = ADC

Then,
$$\frac{CB}{AC} = \frac{AC}{DC}(CPCT)$$
$$\Rightarrow \qquad \frac{CB}{12} = \frac{12}{8}$$
$$\Rightarrow \qquad CB = \frac{12 \times 12}{8} = 18$$

54. Option (4) is correct.

$$\frac{\tan^3 45^\circ + 4\cos^3 60^\circ}{2\csc^2 45^\circ - 3\sec^2 30^\circ + \sin 30^\circ}$$
$$= \frac{1^3 + 4 \times \left(\frac{1}{2}\right)^3}{2 \times \left(\sqrt{2}\right)^2 - 3\left(\frac{2}{\sqrt{3}}\right)^2 + \frac{1}{2}} = \frac{1 + \frac{4}{8}}{4 - 4 + \frac{1}{2}}$$
$$= \frac{\frac{3}{2}}{\frac{1}{2}} = 3$$

55. Option (3) is correct.

We know that ratio of investment is equal to the ratio of profit distribution.

cm

A's investment =
$$33\frac{1}{3}\%$$
 of total investment
= $\frac{100}{3}\%$ of total investment
= $\frac{1}{3}$ of total investment

B's investment =
$$\left(1 - \frac{1}{3}\right) \times \frac{1}{4}$$
 of total investment
= $\frac{1}{6}$ of total investment

C's investment =
$$\left(1 - \frac{1}{3} - \frac{1}{6}\right)$$
 of total investment

$$=$$
 $\frac{1}{2}$ of total investment

Ratio's of investment = $\frac{1}{3}:\frac{1}{6}$ $\overline{2}$

A's profit =
$$\frac{2}{2+1+3}$$
 × 2,19,000 = ₹ 73,000

56. Option (4) is correct.

Given that, BP = 4.5 cm, AB = 6.3 cm and CD = 3.6 cm As per the given information the figure will be



PD = x cmLet, We know, $PB \times PA = PD \times PC$ \Rightarrow PB × (PB + BA) = PD × (PD + DC) $\Rightarrow 4.5 \times (4.5 + 6.3) = x \cdot (x + 3.6)$

$$\Rightarrow 4.5 \times 10.8 = x^2 + 3.6x$$

$$\Rightarrow 48.6 = x^2 + 3.6x$$

$$\Rightarrow 10x^2 + 36x - 486 = 0$$

$$\Rightarrow 5x^2 + 18x - 243 = 0$$

$$\Rightarrow x = \frac{-18 \pm \sqrt{18^2 - 4 \times 5 \times (-243)}}{2 \times 5} = \frac{-18 \pm 72}{10}$$

$$x = \frac{-18 - 72}{10} = -9$$
(not possible, since length cannot be negative)
Therefore, $x = \frac{-18 + 72}{10} = 5.4$ cm
Therefore, PD = 5.4 cm

57. Option (1) is correct. Let the five numbers are *a*, *b*, *c*, *d* and *e*. According to question,

$$\Rightarrow \frac{a+b+c+d+e}{5} = 30$$

$$a + b + c + d + e = 150$$

Let the excluded value is a. According to question,

 $\frac{b+c+d+e}{4} = 31$

$$\Rightarrow b + c + d + e = 124$$

Put this value in equation (i)

$$a + 124 = 150$$

a = 26

5

-

The radius of the solid metallic sphere = 12 cm Diameter of the cylindrical vessel = 32 cm The volume of a cylinder

$$\pi \times (\text{Radius})^2 \times (\text{Height})^2$$

The volume of a sphere = $\left(\frac{4}{3}\right) \times \pi \times (\text{Radius})^3$

The radius of the cylindrical vessel = $\frac{32}{2}$ = 16 cm

Let, the height of water increase = x cm

So,
$$\pi \times (16)^2 \times x = \left(\frac{4}{3}\right) \times \pi \times (12)^3$$

$$\Rightarrow \qquad x = \frac{2304}{256}$$

x = 9 \Rightarrow 59. Option (2) is correct. Given that: $5 \sin \theta - 4 \cos \theta = 0$ \Rightarrow $5\sin\theta = 4\cos\theta$ Now, $\frac{5\sin\theta + 2\cos\theta}{5\sin\theta + 3\cos\theta} = \frac{4\cos\theta + 2\cos\theta}{4\cos\theta + 3\cos\theta} = \frac{6}{7}$

...(i)

60. Option (2) is correct.

Let side of square is *x* units

 \therefore diagonal of square = $x\sqrt{2}$ units According to question,

$$x\sqrt{2} = a + b$$

..(i)

M = Men; B = Boys

Let,

$$\Rightarrow \qquad x = \frac{a+b}{\sqrt{2}}$$

Now area of square $= \left(\frac{a+b}{\sqrt{2}}\right)^2 = \frac{(a+b)^2}{2}$
$$= \frac{a^2+b^2+2ab}{2} = \frac{a^2+b^2}{2}+ab$$

61. Option (4) is correct.

Monthly household expenditure of family A = 50,000The total monthly Household Expenditure of family B = 75,000

The total expenditures on entertainment of both families

$$= \left[\left(\frac{10}{100} \right) \times 50,000 \right] + \left[\left(\frac{12}{100} \right) \times 75,000 \right]$$
$$= 5,000 + 9,000$$
$$= 14,000$$

The total monthly Household Expenditure of both families = 50,000 + 75,000 = 1,25,000

The percentage =
$$\left(\frac{14,000}{1,25,000}\right) \times 100$$

= 11.2% \approx 11% (nearest integer)

x + y + z = 18(x + y + z)² = 324 [Squaring both sides] x² + y² + z² + 2 (xy + yz + zx) = 324 x² + y² + z² + 2 × 90 = 324 x² + y² + z² = 324 - 180 = 144 Now, x³ + y³ + z³ - 3xyz = (x + y + z) (x² + y² + z² - xy - yz - zx) $\Rightarrow x^{3} + y^{3} + z^{3} - 3xyz$ = (x + y + z) {x² + y² + z² - (xy + yz + zx)} $\Rightarrow x^{3} + y^{3} + z^{3} - (3 \times 81) = 18 (144 - 90)$ $\Rightarrow x^{3} + y^{3} + z^{3} - 243 = 18 \times 54 = 972$ $\Rightarrow x^{3} + y^{3} + z^{3} = 972 + 243 = 1215$ So, x³ + y³ + z³ + xyz = 1215 + 81 = 1296 **63. Option (3) is correct.**

Initial profit = 50%

100

The initial selling price of a cup of tea = ₹ 9 The final selling price of a cup of tea = ₹ 10 We know that,

C.P. =
$$\frac{100}{100 + \text{Profit}\%} \times \text{S.P.}$$

Profit% = (Profit/Cost price) × 100
Initial C.P. = $\frac{100}{100 + 50} \times 9 = \frac{100}{150} \times 9 = 6$
Final C.P. = $6 \times \frac{125}{100} = 7.5$

The profit percentage

$$= \frac{10-7.5}{7.5} \times 100 = \left(\frac{2.5}{7.5}\right) \times 100 = 33\frac{1}{3}\%$$

The percentage of the tea seller is $33\frac{1}{3}\%$

64. Option (2) is correct.

4 men and 6 boys can do a work in 8 days 6 men and 4 boys can do the same work in 7 days

 $(4M + 6B) \times 8 = (6M + 4B) \times 7$ 32M + 48B = 42M + 28B \Rightarrow 42M - 32M = 48B - 28B \Rightarrow \Rightarrow 10M = 20BΜ 2 = \Rightarrow B 1 So, the efficiency of one man = 2Efficiency of one boy = 1Total work = $[(4 \times 2) + (6 \times 1)] \times 8 = 14 \times 8 = 112$ Efficiency of 5 men and 4 boys $=(5 \times 2) + (4 \times 1) = 10 + 4 = 14$ Required time to finish the work = $\frac{112}{14}$ = 8 days 65. Option (2) is correct. Here, 20% = 3,080 $100\% = 3,080 \times 5 = 15,400$ \Rightarrow Given profit =3,080The selling price = 15,400 + 3080 = 18,480The selling price of the article is ₹ 18,480 66. Option (1) is correct. $5\left(1-\frac{x}{5}\right) - (5-x) - \frac{1}{200} \text{ of } (20-x) = 0.08$ $\Rightarrow 5\left(1-\frac{x}{5}\right)-(5-x)-\frac{1}{10}+\frac{x}{200} = \frac{8}{100}$ $\Rightarrow 5 - x - 5 + x - \frac{1}{10} + \frac{x}{200} = \frac{8}{100}$ $\frac{x}{200} - \frac{1}{10} = \frac{8}{100}$ $\frac{x}{200} = \frac{8}{100} + \frac{1}{10}$ \Rightarrow $=\frac{18}{100}$ \Rightarrow 200 $\frac{x}{2}$ = 18 \Rightarrow $x = 2 \times 18$ \Rightarrow \rightarrow x = 3667. Option (1) is correct. 2p+ R 2p α In $\triangle ABD$ and $\triangle AEC$, AD = AE[Given] $\angle ADB = \angle AEC$ [Exterior angles of $\angle ADE$, where $\angle ADE = \angle AED$] $\angle BAD = \angle CAE$ [Given] So, $\triangle ABD \sim \triangle AEC$ [ASA similarity criterion]

So,
$$\frac{AB}{AC} = \frac{BD}{CE} = \frac{AD}{AE}$$
 (CPCT)

ç

$$\Rightarrow \qquad \frac{2p+3}{3q-1} = \frac{2p}{q} = 1 \qquad \text{[Since, AD = AE]}$$
$$\Rightarrow \qquad 2p = q \qquad \dots \dots (1)$$

2p + 3 = 3q - 1 \Rightarrow 3q - 2p = 3 + 1 \Rightarrow 3q - q = 4[2p = q] \Rightarrow 2q = 4 \Rightarrow q = 4/2 = 2 \Rightarrow Put q = 2 in the equation (1), 2p = 2p = 1 \Rightarrow Now, p + q = 1 + 2 = 368. Option (4) is correct. As per the given information, we 6 cm 0 can draw the following figure. B 20 cm Diameter, BC = 20 cm and PO =6 cm AB || CD and AB and CD chords D are connected to the two points of diameter BC Then. AB = CD $OP \perp AB$ Radius (OB) = $\frac{20}{2}$ = 10 cm So, PB = $\sqrt{10^2 - 6^2} = \sqrt{100 - 36} = \sqrt{64} = 8 \text{ cm}$ Then, AB = (PB + PA) = 8 + 8 = 16 cmCD = AB = 16 cm... The length (in cm) of the chord CD is 16 cm 69. Option (4) is correct. Height of the kite = 120 mThe angle is made by the string $= 60^{\circ}$ 120 m As per the given information the figure is drawn. \60° The distance of kite from the C ground (AB) = 120 m and $\angle ACB = 60^{\circ}$ The length of the string = AC $\sin 60^\circ = \frac{AB}{AC}$ So, $\frac{\sqrt{3}}{2} = \frac{120}{AC}$ $sin 60^{\circ} = 3/2$ \rightarrow $AC = (120 \times 2) / \sqrt{3} = 80 \sqrt{3} m$ \Rightarrow \therefore The length of the string is $80\sqrt{3}$ m 70. Option (3) is correct. Price of one vanilla cake = ₹9 Price of one chocolate cake = ₹ 10 Total number of cakes sold in the week = 10,500The total number of cakes sold on Friday $=\left(\frac{10}{100}\right) \times 10,500 = ₹1,050$ The ratio of vanilla cakes sold to chocolate cakes sold on Friday = 4:3

The number of vanilla cake sold

$$= \left(\frac{4}{7}\right) \times 1,050 = ₹ 600$$

The number of chocolate cake sold = 1,050 - 600 = ₹ 450

= 5.400 + 4500 = ₹ 9.900 71. Option (4) is correct. Let, Amount = 1 then simple interest = 1/4The rate of interest = R then, time = $\frac{1}{4}$ $\frac{1}{4} = \frac{1 \times R \times \left(\frac{R}{4}\right)}{1 \times R \times \left(\frac{R}{4}\right)}$ Now, $\frac{R^2}{400}$ \Rightarrow $R^2 = 100$ \Rightarrow $R = \sqrt{100} = 10\%$ \Rightarrow The rate of interest = 10%The new rate of interest = 10 + 2 = 12%Total interest for 3 years = $3 \times 12 = 36\%$ ∴ The total simple interest $=\left(\frac{36}{100}\right) \times 5,000 = 1,800$ ∴ The simple interest is ₹ 1,800 72. Option (4) is correct. As per the given data, % of expenditure to income in 2014 == 0.77% of expenditure to income in 2015 = = 0.89% of expenditure to income in 2016 = = 0.84% of expenditure to income in 2017 = = 0.86% of expenditure to income in 2018 = = 0.93350 ... The ratio of expenditure to income was the minimum in 2014 73. Option (4) is correct. The given 9-digit number = 7x79251y8v8 needs to be divisible by 4 If y = 8 (largest value) then y8 = 88Now, the number = $7x7925188 \rightarrow \text{Divisible by } 4$ Here, (7 + x + 7 + 9 + 2 + 5 + 1 + 8 + 8) be divisible by 9 \Rightarrow (47 + *x*) be divisible by 9 Put x = 7 \Rightarrow (47 + x) = 47 + 7 = 54 (divisible by 9) So, x = 7; y = 8Then, $(10x^2 - 3y^2) = 10 \times (7)^2 - 3 \times (8)^2 = 10 \times 49 - 3 \times 64$ =490 - 192 = 29874. Option (1) is correct. Number of total employees = 400% of regular employees = 87.5%% of regular male employees = 92%Total number of regular employees = $\left(\frac{87.5}{100}\right) \times 400 = 350$

The total sale = $(600 \times 9) + (450 \times 10)$

Ratio of the number of male employees to that of female employees = 5:3

The number of male employees = $\left(\frac{5}{8}\right) \times 400 = 250$

The number of female employees = 400 - 250 = 150The number of regular male employees

$$= \left(\frac{92}{100}\right) \times 250 = 230$$

The percentage of regular female employees

$$= \left[\frac{350 - 230}{150}\right] \times 100$$
$$= \left(\frac{120}{150}\right) \times 100 = 80\%$$

75. Option (2) is correct.

Total marks of the test = 30Minimum pass marks - 10

$$(50)$$

50% of the total marks =
$$\left(\frac{50}{100}\right) \times 30 = 15$$

Total number of students who scored between 10 and 15 = 7

Therefore, a total number of 7 students have passed the test and obtained less than 50% marks.

English Comprehension

76. Option (1) is correct.

Reporting the message of the speaker in the exact words spoken by him is known as "direct speech." Reporting the message of the speaker in our own words is known as "indirect speech." The given sentence is in indirect speech. The correct conversion of the given sentence is given in option (1).

77. Option (4) is correct.

The given sentence tests a student's vocabulary. "Lacuna" means an unfilled space; a gap. Example: "The journal has filled a lacuna in Middle Eastern studies." "Languor" means tiredness or inactivity, especially when pleasurable. Example: "Her whole being was pervaded by a dreamy languor." "Apathy" means lack of feeling or emotion, impassiveness. Example: "There is a growing sense of apathy among teens and a feeling that there are no opportunities," he said. "Hiatus" means a short pause in which nothing happens or said, or a space where something is missing. The synonym of "lacuna" is "hiatus."

78. Option (1) is correct.

The given sentence tests a student's vocabulary. "Ascent" means a climb or walk to the summit, an upward slope or path that one may walk or climb. Example: "The first ascent of the Matterhorn." "Descent" means "moving downwards, sloping downwards." The antonym of "ascent" is "descent." Hence, the correct answer is option (1). "Patent" means a government authority or licence conferring a right or title for a set period, especially the sole right to exclude others from making, using, or selling an invention. "Resent" means to feel bitterness or indignation at (a circumstance, action, or person).

79. Option (2) is correct.

The given sentence tests a student's vocabulary and idiomatic expression. "Dark horse" refers to a candidate or competitor about whom little is known but who unexpectedly wins or succeeds. Example: "A Gloucester side that could be a dark horse for the title."

80. Option (2) is correct.

In the active voice, the sentence's subject performs the action. It is used to direct the reader's attention to the subject of a sentence. In the passive voice, the action's target is the focus, and the verb acts upon the subject. To convert active voice into passive voice, students need to identify the (S+V+O) subject, verb, and object in the active sentence. The given sentence is in the active voice. Hence, the passive form of the given sentence should be "Ritu was invited to a party by Preeti."

81. Option (1) is correct.

The sentence intends to express that the lady wants money along with love and care. The word underlined is "beyond," which means "past, after, or far off." This gives the impression that the lady wants money after receiving love and care. Thus, it creates an incorrect connotation. The correct usage will be "besides," which means "in addition to."

82. Option (4) is correct.

This question tests your vocabulary. "Clench" means "close into a tight ball, especially as a manifestation of extreme anger." Example: "She clenched her fists, struggling for control." "Ian's right hand clenched into a fist." Tighten, clasp, and hold are close meanings of the word "clench." The antonym of "clench" is "relax."

83. Option (1) is correct.

In the active voice, the sentence's subject performs the action. It is used to direct the reader's attention to the subject of a sentence. In the passive voice, the action's target is the focus, and the verb acts upon the subject. To convert the voice, students need to identify the (S+V+O) subject, verb, and object in the passive sentence to convert to the active voice or vice versa.

Active: Subject + has/have + III rd form of verb + object.

Passive: Object + has/have + been + verb (III rd from) + by + subject

84. Option (2) is correct.

The question has an error of redundancy. The given phrase states, "quite too simpler." "Quite" means "to a certain or fairly significant extent or degree." And "too" also means "to a higher degree than is desirable, permissible." Hence, using both words together is unnecessary.

85. Option (1) is correct.

The question tests a student's vocabulary. Graffiti is defined as "drawings or writing scribbled on public walls." Hence, the correct answer is option (1). A poster is a large printed picture, photograph, or notice that you stick or pin to a wall or board. Sketches are rough or unfinished drawings or paintings, often made to assist in making a more finished picture. Hoardings are large boards in public places used to display advertisements.

86. Option (1) is correct.

The question tests a student's vocabulary. Solemn means formal and dignified. Example: He spoke in a solemn voice. The synonym of "solemn" is "dignified." Hence, the correct answer is option (1). Trivial and frivolous are the antonyms of solemn. 87. Option (4) is correct.

The sentence has an error in word usage. "We have little time." This means we do not have much time. It emphasises the fact that we have only a small amount of time.

"We have a little time." This means we do not have any time. It emphasises the fact that we have some time; we are not entirely out of time yet. The given sentence wants to say that they were not left with much time. Hence, the correct usage would be "very little time."

88. Option (3) is correct.

The given sentence gives information about Harish's sound in an empty house. Sound will reverberate in an empty space. The word that is a synonym of "echo" will be the best fit in the given blank. Hence, the correct answer is "resounded."

89. Option (1) is correct.

The given statement has an error in word usage. The sentence incorrectly uses "farther" in place of "further." Farther means "far than something." It indicates distance. "Further" means in addition to. The sentence intends to say that if he wants further information, he should contact me.

90. Option (1) is correct.

This question tests a student's vocabulary. The study of insects is called "entomology." Geology is the science that deals with the earth's physical structure and substance, its history, and the processes that act on it. Ecology is the branch of biology that studies organisms' interactions with one another and with their physical surroundings. Biology is the study of living organisms. **91. Option (1) is correct.**

This question tests a student's knowledge of idiomatic expression. "A stone's throw" means a very short distance. Example: The apartment is just a stone's throw from the sea. **92. Option (3) is correct.**

The incorrectly spelled word is "attick." It should be "attack." "Aisle" means a passage between rows of seats in a building such as a church or theatre, an aircraft, or a train. Adorn means to make more beautiful or attractive. Altar means a table or flat-topped block used as the focus for a religious

ritual, especially for making sacrifices or offerings to a deity. **93. Option (2) is correct.**

Tag questions (or question tags) turn a statement into a question. They are often used for checking information that we think is true. Usually, if the main clause is positive, the question tag is negative, and if the main clause is negative, the question tag is positive. If the main clause has an auxiliary verb in it, we use the same verb in the tag question. If there is no auxiliary verb (in the present simple and past simple), use do/does,/did. In the given question, the correct question tag will be "haven't you?"

94. Option (2) is correct.

Tag questions (or question tags) turn a statement into a question. They are often used for checking information that

we think is true. Usually, if the main clause is positive, the question tag is negative, and if the main clause is negative, the question tag is positive. If the main clause has an auxiliary verb in it, we use the same verb in the tag question. If there is no auxiliary verb (in the present simple and past simple), use do/does,/did. In the given question, the correct question tag will be "doesn't she?"

95. Option (2) is correct.

The paragraph is about a new park. The subject is introduced in the statement (D) so, it is the obvious opener. (D) will be followed by (A) because (A) gives further information about the park. There is only one option that starts with DA, that is option (2).

96. Option (2) is correct.

The paragraph is about "yoga." The first sentence says that yoga is not only about bending and twisting your body. The next sentence will say, it is much more. Hence, the word that best fits in the blank is "much."

97. Option (2) is correct.

The blank needs a preposition. The apt preposition in the given context is "to."

98. Option (2) is correct.

The sentence talks about the origin of the word "yoga." The correct expression is "derived from."

99. Option (2) is correct.

The blank is followed by a countable noun; thus, in the blank, you need to fill in an article. The article that is suitable is "a," because when you refer to an indefinite singular noun, you use "a or an." "An" is used before vowel sounds, and "a" is used before consonant sounds. Here, the noun starts with a consonant sound.

100. Option (4) is correct.

The correct preposition in the given context is "with," because the sentence says that yoga is about connecting body and soul.