

**STAFF SELECTION COMMISSION**  
**COMBINED GRADUATE LEVEL (TIER-I)**

**SOLVED PAPER**

**(13<sup>th</sup> August 2020: Shift-2)**

**Time Allotted:** 1 hour

**Max marks:** 200

**General Intelligence and Reasoning**

1. Select the combination of letters that, when sequentially placed in the blanks of the given series, will complete the series.

I \_ chtlgc \_ tlg \_ ht \_ gc \_ tlghc \_

1. g, h, c, h, l, t
  2. h, h, g, c, l, t
  3. g, h, c, l, h, t
  4. h, g, h, c, l, t
2. In a certain code language, 'DOLPHIN' is written as 'EPMPGHHM'. How will 'CORDIAL' be written in that language?

1. EPTDHZK
2. DPSDHAL
3. DPSDHZK
4. DPSEGZK

3. Four number-pairs have been given, out of which three are alike in some manner and one is different. Select the number-pair that is different.

1. 7 : 147
2. 8 : 192
3. 12 : 432
4. 13 : 506

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

Resistance : Ohm

1. Density : Joule
  2. Ampere : Current
  3. Force : Watt
  4. Angle : Radians
5. Four words have been given, out of which three are alike in some manner and one is different. Select the word that is different.

1. Headway
2. Advance
3. Growth
4. Deteriorate

6. Select the option in which the numbers are related in the same way as are the numbers of the following set.

(12, 30, 61)

1. (18, 45, 91)
2. (8, 21, 45)
3. (6, 15, 30)
4. (14, 35, 72)

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

4, 11, 31, 65, 193, ?

1. 368
2. 389
3. 386
4. 398

8. Select the option in which the numbers are related in the same way as are the numbers of the following set.

(24, 10, 392)

1. (29, 18, 242)
2. (21, 18, 234)
3. (26, 12, 369)
4. (27, 15, 480)

9. Three different positions of the same dice are shown. Select the letter/number that will be on the face opposite to the face having the letter 'U'



1. E
2. 9
3. A
4. I

10. Select the correct mirror image of the given combination when the mirror is placed at 'PQ' as shown.



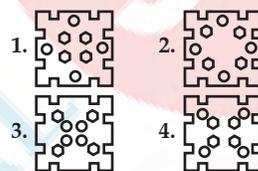
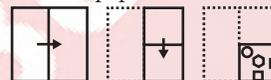
1. J R 3 c \Delta \cap \sigma \sigma
2. Q 5 U I \nabla \sigma \epsilon g T
3. Q 5 U \nabla \sigma \epsilon g T
4. J R 3 c \Delta \cap \sigma \sigma

11. Select the option that is related to the fourth number in the same way as the first number is related to the second number and the fifth number is related to the sixth number.

17 : 293 :: ? : 488 :: 21 : 445

1. 28
2. 24
3. 22
4. 20

12. The sequence of folding a piece of paper and the manner in which the folded paper has been cut is shown in the following figures. How would this paper look when unfolded?

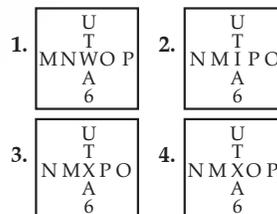
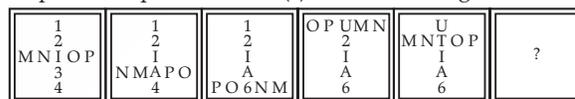


13. Select the correct combination of mathematical signs that can sequentially replace the \* signs and balance the equation.

$60 * 2 * 3 * 6 * 5 * 43$

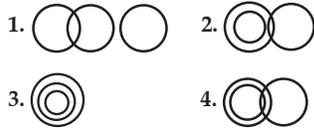
1.  $\div, +, \times, =, -$
2.  $\div, +, \times, -, =$
3.  $+, \div, \times, =, -$
4.  $\div, \times, +, -, =$

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



15. Select the Venn diagram that best illustrates the relationship between the following classes.

Musicians, Females, Daughters



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

**Statements:**

All directors are actors.

No actor is a producer.

All choreographers are directors.

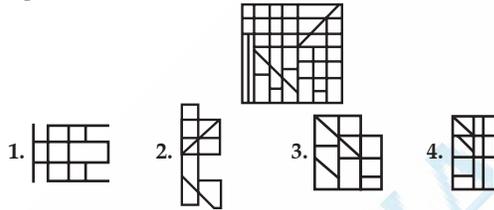
**Conclusions:**

I. No choreographer is a producer.

II. Some actors are choreographers.

III. No director is a producer.

1. Only conclusions II and III follow.
  2. Only conclusions I and II follow.
  3. All the conclusions follow.
  4. Only conclusions I and III follow.
17. Select the option that is related to the third word in the same way as the second word is related to the first word.  
Chisel: Sculptor :: Anvil : ?
1. Butcher
  2. Blacksmith
  3. Carpenter
  4. Surgeon
18. Four letter-clusters have been given, out of which three are alike in some manner and one is different. Select the letter-cluster that is different.
1. LNQJ
  2. BDGT
  3. HJMP
  4. TVYB
19. Select the letter-cluster from among the given options that can replace the question mark (?) in the following series.  
CMQR, BONV, AQKZ, ZSHD, ?
1. YVEI
  2. ZUDH
  3. ZVGH
  4. YUEH
20. Select the option figure that is embedded in the given figure (rotation is NOT allowed).



21. Seven years from now, Anamika will be as old as Malini was 4 years ago. Srinidhi was born 2 years ago. The average age of Anamika, Malini and Srinidhi 10 years from now will be 33 years. What is the present age of Anamika?

1. 30 years    2. 28 years    3. 31 years    4. 29 years

22. Find the number of triangles in the given figure.

1. 13            2. 12  
3. 15            4. 14

23. 'R8S' means 'R is the father of S'.  
'R7S' means 'R is the sister of S'.  
'R6S' means 'R is the brother of S'.  
'R2S' means 'R is the wife of S'.  
Which of the following expressions represents 'X is the mother of Y'?

1. X2M8Y    2. X7M6O2Y    3. X2M8O2Y    4. X8M2Y

24. Select the correct option that indicates the arrangement of the given words in the order in which they appear in an English dictionary.

1. protest    2. palindrome    3. probability  
4. pathetic    5. parking

1. 2, 4, 5, 3, 1
  2. 2, 1, 3, 4, 5
  3. 2, 5, 1, 4, 3
  4. 2, 5, 4, 3, 1
25. In a certain code language, 'VIRTUE' is coded as '201' and 'TRAGEDY' is coded as '218'. How will 'PROFANE' be coded in that language?
1. 570
  2. 342
  3. 456
  4. 432

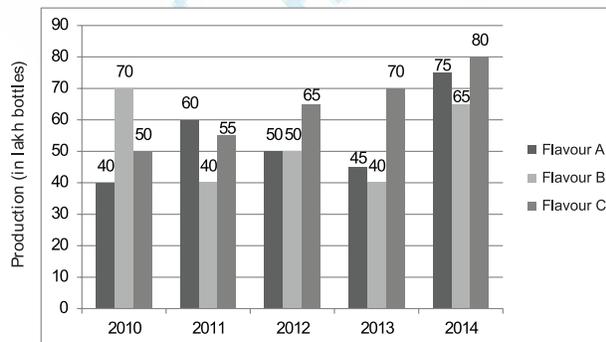
**General Awareness**

26. Which of the following Articles of the Constitution of India states that there will be a Vice President of India?
1. Article 56
  2. Article 63
  3. Article 75
  4. Article 45
27. With which of the following sports is Ruia Gold Cup associated?
1. Water polo
  2. Swimming
  3. Badminton
  4. Bridge
28. Which of the following is NOT used to make toothpaste?
1. Silica
  2. Aluminium Oxide
  3. Galena
  4. Limestone
29. The Mysore Palace was the residence of the \_\_\_\_\_.
1. Palas
  2. Wodeyars
  3. Chandelas
  4. Bundelas
30. Who among the following assassinated Sir William Hutt Curzon Wylie in London?
1. Sukhdev Thapar
  2. Surya Sen
  3. Madan Lal Dhingra
  4. Khudiram Bose
31. Which of the following Acts introduced federal features and provincial autonomy in the legislature and also made provisions for the distribution of legislative powers between the Centre and the provinces?
1. The Government of India Act, 1919
  2. The Government of India Act, 1935
  3. The Government of India Act, 1858
  4. Indian Councils Act, 1909
32. Lakshya Sen is associated with which of the following sports?
1. Basketball
  2. Table tennis
  3. Badminton
  4. Lawn tennis
33. Pattachitra art form is dedicated to which Lord in Hindu mythology?
1. Lord Ganesha
  2. Lord Jagannath
  3. Lord Brahma
  4. Lord Shiva
34. With what do you divide thrust in a liquid to obtain the value of pressure?
1. Density
  2. Mass
  3. Volume
  4. Area
35. With which of the following countries did India sign an agreement in February 2021 for the construction of Lalandar (Shatoot) Dam?
1. Brazil
  2. Afghanistan
  3. Japan
  4. Australia
36. Veer Surendra Sai was a freedom fighter from:
1. Sikkim
  2. Telangana
  3. Odisha
  4. Nagaland
37. An elastic wave generated by an impulse such as an earthquake or an explosion is called \_\_\_\_\_.
1. tectonic shift
  2. sound wave
  3. seismic wave
  4. epicentre
38. Who among the following persons was announced as the brand ambassador for the BAFTA (British Academy of Film and Television Arts) 'Breakthrough Initiative' in November 2020?
1. Akshay Kumar
  2. A.R. Rahman
  3. Kuldeep Handoo
  4. Ajay Devgan
39. In which of the following states is the Rowa Wildlife Sanctuary situated?
1. Tripura
  2. Punjab
  3. Assam
  4. Haryana
40. Who among the following persons was elected as the Vice President of Asia Pacific Broadcasting Union in December 2020?
1. Rakesh Mohan
  2. Hemant Pandey
  3. Bina Agarwal
  4. Shashi Shekhar Vempati

41. Mizoram has started 'Love Brigade' scheme to fight against which of the following diseases in December 2020?  
1. Gonorrhoea 2. Chlamydia  
3. HIV/AIDS 4. Syphilis
42. Where is the corporate office of RBL Bank located?  
1. Srinagar 2. Patna 3. Bengaluru 4. Mumbai
43. Who among the following was the founder of Homeopathy?  
1. Samuel Hahnemann 2. F.G. Hopkins  
3. Robert Koch 4. Selman Waksman
44. A channel of canal where water is forced to flow against the slope of land by upliftment is called \_\_\_\_\_.  
1. groundwater table 2. lift channel  
3. flow channel 4. warabandi system
45. Who among the following was appointed as the Chief Executive of the health insurance scheme 'Ayushman Bharat' by the National Health Authority in January 2021?  
1. R.S. Sharma 2. Sanjeev Kumar  
3. Rama Mohan Rao Amara 4. Anil Ladha
46. Which of the following states launched the SAANS (Social Awareness and Action to Neutralise Pneumonia Successfully) campaign in February 2021?  
1. Uttar Pradesh 2. Madhya Pradesh  
3. Odisha 4. Sikkim
47. Who among the following wrote the novel 'Rangbhumi: The Arena of Life'?  
1. Rabindranath Tagore 2. Abanindranath Tagore  
3. Munshi Premchand 4. Mahatma Gandhi
48. Who among the following was appointed as the Managing Director and Chief Executive Officer of SBI Cards and Payment Services Ltd. in January 2021?  
1. Swaminathan Janakiraman  
2. Rajnish Kumar  
3. Ashwini Kumar Tewari  
4. Rama Mohan Rao Amara
49. In which of the following years was the Mughal empire established by Babur?  
1. 1699 2. 1526 3. 1578 4. 1634
50. In which of the following temples will you find Gopurams?  
1. Golden Temple, Amritsar  
2. Bhabatarini Temple, Dakshineswar  
3. Dilwara Temple, Mount Abu  
4. Shiva Temple, Chidambaram

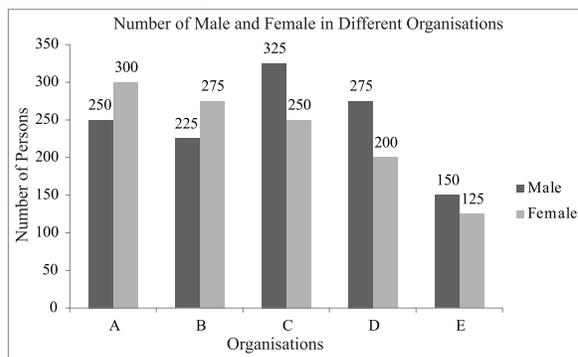
### Quantitative Aptitude

51. If  $16x^2 + y^2 = 48$  and  $xy = 2$ ,  $x, y > 0$ , then the value of  $(64x^3 + y^3)$  is:  
1. 320 2. 240 3. 300 4. 340
52. Cough syrup of three different flavours A, B and C (in lakh bottles) manufactured by a medicine company over a period of five years from 2010 to 2014 has been shown in the bar graph.



The ratio of the average production of all flavours in 2012 to the difference of the average production of flavour A in 2012, 2013 and 2014 and the average production of flavour C in 2012, 2013 and 2014 is :

1. 15 : 26 2. 26 : 15 3. 11 : 3 4. 3 : 11
53. If  $x - \frac{1}{x} = 5$ ,  $x \neq 0$ , then what is the value of  $\frac{x^6 - 5x^2 - 1}{x^6 + 7x^3 - 1}$ ?  
1.  $\frac{45}{49}$  2.  $\frac{45}{41}$  3.  $\frac{49}{45}$  4.  $\frac{41}{45}$
54. If  $x - y = 11$  and  $\frac{1}{x} - \frac{1}{y} = \frac{11}{24}$ , then what is the value of  $x^3 - y^3 + x^2y^2$ ?  
1. 1,105 2. 1,307 3. 1,331 4. 1,115
55. If length of a rectangle is increased to its three times and breadth is decreased to its half, then the ratio of the area of given rectangle to the area of the new rectangle is:  
1. 3 : 1 2. 2 : 3 3. 3 : 2 4. 1 : 3
56. If  $2 \cos^2 \theta - 3 \sin \theta$ ,  $0^\circ < \theta < 90^\circ$ , then the value of  $(\sec^2 \theta - \tan^2 \theta + \cos^2 \theta)$  is:  
1.  $\frac{3}{4}$  2.  $\frac{7}{4}$  3.  $\frac{9}{4}$  4.  $\frac{5}{4}$
57. In a circle with centre O, AD is a diameter and AC is a chord. Point B is on AC such that  $OB = 7$  cm and  $\angle OBA = 60^\circ$ . If  $\angle DOC = 60^\circ$ , then what is the length of BC (in cm)?  
1. 5 2. 3.5 3. 9 4. 7
58. A shopkeeper sold two articles for ₹10,591 each. On one, he gained 19% and on the other, he lost 11%. What was his overall gain or loss percent (correct to one decimal place)?  
1. Profit 1.8% 2. Loss 2.7% 3. Profit 5% 4. Loss 10%
59. Surbhi sold an article for ₹176 after giving 12% discount on its marked price. Had she not given any discount; she would have earned a profit of 25%. What is the cost price (in ₹) of the article?  
1. 145 2. 165 3. 150 4. 160
60. In a class of 90 students, 60% are girls and remaining are boys. Average marks of boys are 63 and that of girls are 70. What are the average marks of the whole class?  
1. 65.3 2. 58.9 3. 66.7 4. 67.2
61. The value of  $\frac{2 \sin^2 30^\circ \tan 60^\circ - 3 \cos^2 60^\circ \sec^2 30^\circ}{4 \cot^2 45^\circ - \sec^2 60^\circ + \sin^2 60^\circ + \cos^2 90^\circ}$   
1.  $\frac{1}{3}(\sqrt{3} + 2)$  2.  $\frac{2(\sqrt{3} + 2)}{3}$  3.  $\frac{2(\sqrt{3} - 2)}{3}$  4.  $\frac{1}{3}(\sqrt{3} - 2)$
62. Number of male and female members in different organisations A, B, C, D and E are given in the bar graph.



What is the ratio of the average number of females in all the five organisations to the average number of males in all the five organisations?

1. 46 : 49 2. 51 : 49 3. 49 : 51 4. 49 : 46

63. If a five-digit number  $247xy$  is divisible by 3, 7 and 11, then what is the value of  $(2y - 8x)$ ?

1. 6                      2. 11                      3. 9                      4. 17

64. In a triangle ABC,  $AB : AC = 5 : 2$ ,  $BC = 9$  cm. BA is produced to D, and the bisector of the Angle CAD meets BC produced at E. What is the length (in cm) of CE?

1. 6                      2. 9                      3. 10                      4. 3

65. Find the value of

$$\frac{8 \sin 30^\circ \sin^2 60^\circ - 4 \sin 90^\circ - \sec^2 45^\circ}{\tan^2 45^\circ - \cot^2 30^\circ}$$

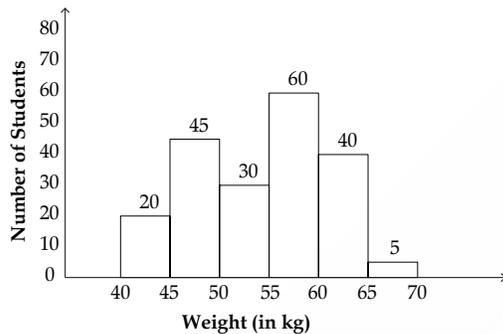
1.  $\frac{3}{2}$                       2.  $\frac{5}{2}$                       3.  $-\frac{1}{2}$                       4.  $\frac{3}{4}$

66. In  $\triangle ABC$ , D and E are the points on sides AB and AC, respectively such that  $\angle ADE = \angle B$ . If  $AD = 7$  cm,  $BD = 5$  cm and  $BC = 9$  cm, then DE (in cm) is equal to:

1. 7                      2. 5.25                      3. 6.75                      4. 10

67. The histogram shows the weights of students of class X in a school.

Let  $x$  be the number of students whose weight is less than 50 kg and  $y$  be the number of the students whose weight is greater than or equal to 60 kg. What is the value of  $x : y$ ?



1. 13 : 11                      2. 9 : 13                      3. 13 : 9                      4. 11 : 13

68. ABCD is a cyclic quadrilateral. Diagonals BD and AC intersect each other at E. If  $\angle BEC = 138^\circ$  and  $\angle ECD = 35^\circ$ , then what is the measure of  $\angle BAC$ ?

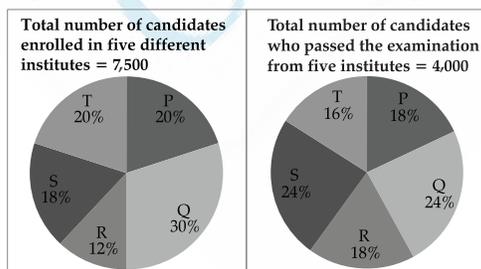
1.  $103^\circ$                       2.  $123^\circ$                       3.  $113^\circ$                       4.  $133^\circ$

69. The rate of simple interest for the first two years is 8% p.a., for the next 4 years, it is 10% p.a., and for the period beyond 6 years, it is 12% p.a. If a person gets ₹18,358.60 as simple interest after 9 years, then how much money (in ₹) did he invest?

1. 19,955                      2. 19,674                      3. 21,075                      4. 20,087

70. The following pie charts represent the distribution of candidates who were enrolled for a competitive examination, and the candidates (out of those enrolled) who passed the exam from five different institutes P, Q, R, S and T.

What is the ratio of the total number of candidates enrolled in institutes Q, R and S together, to the number of candidates who passed from the institutes Q, R and S together?



1. 15 : 71                      2. 75 : 44                      3. 71 : 15                      4. 44 : 75

71. The ratio of two numbers A and B is 5 : 8. If 5 is added to each of A and B, then the ratio of A and B becomes 2 : 3. The sum of A and B is:

1. 42                      2. 65                      3. 91                      4. 78

72. The value of  $3 \div 18$  of  $3 \times 6 - 22 \times 6 \div 18 - 3 \div 2 + 10 - 3 \div 9$  of  $3 \times 9$  is:

1.  $\frac{1}{3}$                       2.  $\frac{1}{2}$                       3.  $-\frac{1}{2}$                       4.  $-\frac{1}{3}$

73. Eighteen persons working 8 hours a day can complete 3 units of work in 10 days. How many days are required by 25 persons to complete 5 units of work working 6 hours a day?

1. 12                      2. 10                      3. 20                      4. 16

74. A 240 m long train overtakes a man walking at 6 km/h, in the same direction, in 9 seconds. How much time (in seconds) will it take to pass a 372 m long tunnel with the same speed?

1. 20                      2. 20.4                      3. 18                      4. 21.6

75. Radha saves 25% of her income. If her expenditure increases by 20% and her income increases by 29%, then her savings increase by:

1. 70%                      2. 52%                      3. 65%                      4. 56%

**English Comprehension**

76. Select the most appropriate option to substitute the underlined segment in the given sentence. If no substitution is required, select 'No substitution required'.

"Can you give me so many examples of subordinate clauses?" the teacher asked the class.

1. some more examples of                      2. No substitution required  
3. some few examples of                      4. some many examples of

77. Select the option that expresses the given sentence in reported speech.

"Is he alright now?" I asked my neighbour's wife about her husband, Mr. Gulyani.

1. I asked Mrs. Gulyani, my neighbour's wife, if her husband had become alright then.  
2. I asked Mrs. Gulyani, my neighbour's wife, if your husband will be alright now.  
3. I asked Mrs. Gulyani, my neighbour's wife, if her husband is alright now.  
4. I asked Mrs. Gulyani, my neighbour's wife, if her husband was alright then.

78. Select the INCORRECTLY spelt word.

1. Terrorism                      2. Alotment                      3. Borrow                      4. Allowance

79. The following sentence has been divided into parts. One of them may contain an error. Select the part that contains the error from the given options. If you don't find any error, mark 'No error' in your answer.

The river appears to have / got its name / from the town nearby.

1. No error                      2. got its name  
3. The river appears to have                      4. from the town nearby

80. Select the most appropriate meaning of the following idiom.

To walk on air

1. To feel very depressed                      2. To be very happy  
3. To be very rich                      4. To be completely free

81. Select the most appropriate meaning of the following idiom.

To take a chill pill

1. To ask a doctor for medication                      2. To calm down  
3. To drink cold water

4. To gulp a tablet for a cold

82. Select the most appropriate synonym of the given word. Prompt

1. Slow                      2. Lengthy                      3. Quick                      4. Gradual

83. Select the INCORRECTLY spelt word.  
1. Sincere 2. Grievance 3. Liesure 4. Seize
84. Select the most appropriate option to fill in the blank.  
Help from relatives \_\_\_\_\_ him in difficult times.  
1. supported 2. passed 3. approved 4. allowed
85. Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the right order to form a meaningful and coherent paragraph.  
A. While India is home to 75 per cent of the tigers in the world, the Global Tiger Day, as it is also known – sees awareness events organised in the country, as well as in neighbouring Bangladesh and Nepal.  
B. Its primary objective is to preserve the natural habitat of the tiger.  
C. International Tiger Day was initiated in 2010, at the Saint Petersburg Tiger Summit.  
D. This annual event observed on 29 July, aims to create awareness on tiger conservation.  
1. BACD 2. CDBA 3. DCBA 4. CABD
86. Select the most appropriate ANTONYM of the given word.  
Putrefy  
1. Destroy 2. Contaminate 3. Combine 4. Decompose
87. Select the option that expresses the given sentence in passive voice.  
The sunrays burned my face.  
1. My face is burned by the sunrays.  
2. My face is being burned by the sunrays.  
3. My face has been burned by the sunrays.  
4. My face was burned by the sunrays.
88. Sentences of a paragraph are given below in jumbled order. Arrange the sentences in the right order to form a meaningful and coherent paragraph.  
A. "Excellently well," said she; "we have everything that we want; I have but one prayer, that we may have a heavy storm of rain to water our plants."  
B. A man who had two daughters married one to a gardener and the other to a potter.  
C. Off he went to the potter's home and asked his other daughter how matters were with her.  
D. After a while, he paid a visit to the gardener's home and asked his daughter how she was, and how it fared with her.  
1. BDAC 2. BCDA 3. DCAB 4. ACDB
89. Select the most appropriate synonym of the given word.  
Dedicated  
1. Tedious 2. Committed 3. Dreary 4. Boring
90. Select the most appropriate ANTONYM of the given word.  
Hope  
1. Chance 2. Courage 3. Optimism 4. Doubt
91. The following sentence has been split into four segments. Identify the segment that contains a grammatical error.  
The woodcutter felled / some trees / with hardly / many effort at all.  
1. some trees 2. with hardly  
3. The woodcutter felled 4. many effort at all
92. Select the most appropriate option to fill in the blank.  
The interviewer asked Gautam, "Can you tell me what your \_\_\_\_\_ in life are?"  
1. trivialities 2. aspirations  
3. determinations 4. frivolities
93. Select the option that can be used as a one-word substitute for the given group of words.  
A self-governing country or region  
1. Autonomy 2. Democracy 3. Anarchy 4. Monarchy
94. Select the option that can be used as a one-word substitute for the given group of words.  
A place where coins, medals or tokens are made  
1. Workshop 2. Casting 3. Mill 4. Mint
95. Select the option that will improve the underlined part of the given sentence. In case no improvement is needed, select 'No improvement required'.  
Fierce competition against restaurants has driven up the prices.  
1. No improvement required 2. among  
3. along 4. through
- Comprehension:**  
In the following passage, some words have been deleted. Fill in the blanks with the help of the alternatives given. Select the most appropriate option for each blank.  
Communication is a connection between people sharing information with (1) \_\_\_\_\_ other. It is important in everyday life, (2) \_\_\_\_\_ work and nearly any time you interact with other (3) \_\_\_\_\_. Communication issues don't always happen (4) \_\_\_\_\_ of your English level. The truth is, you can know how to speak English (5) \_\_\_\_\_ knowing how to communicate in English.
96. Select the most appropriate option to fill in blank number 1.  
1. every 2. each 3. one 4. some
97. Select the most appropriate option to fill in blank number 2.  
1. from 2. while 3. on 4. at
98. Select the most appropriate option to fill in blank number 3.  
1. animals 2. creatures 3. ones 4. people
99. Select the most appropriate option to fill in blank number 4.  
1. about 2. beside 3. because 4. since
100. Select the most appropriate option to fill in blank number 5.  
1. lacking 2. without 3. devoid 4. minus

## Answer Key

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

**Answers with Explanations**

**General Intelligence and Reasoning**

1. **Option (3) is correct.**

The pattern is:

Igcht Igcht Igcht Igcht Igcht

Now, count the total number of letters which is 25, and 25 = 5 × 5 in which there will be 5 groups and each group consists of 5 letters which are total alphabets to be used viz, Icgth.

2. **Option (3) is correct.**

The pattern is:

D +1 E  
O +1 P  
L +1 M  
P +0 P  
H -1 G  
I -1 H  
N -1 M

3. **Option (4) is correct.**

The pattern is: 147 ÷ 7 = 21  
192 ÷ 8 = 24  
432 ÷ 12 = 36  
506 ÷ 13 = 38.92

Hence, from the given options, only 4 is not divisible.

4. **Option (4) is correct.**

The pattern is:

Ohm is the unit of resistance.

Similarly,

Radians is the unit of angle.

Watt is the unit of Power not Force. Ampere is the unit of Current not Force. Joule is the unit of Energy not Density.

5. **Option (4) is correct.**

The logic followed here is: Headway means forward movement of a ship or boat.

Growth is the process of growing and developing and advancing means to move forward are the synonyms.

Deteriorate means to deteriorate and is the opposite of headway, growth and advance.

6. **Option (1) is correct.**

12 × 2 + 12 ÷ 2 = 24 + 6 = 30

30 × 2 + 1 = 60 + 1 = 61

Similarly,

18 × 2 + 18 ÷ 2 = 36 + 9 = 45

45 × 1 = 90 + 1 = 91

7. **Option (2) is correct.**

The pattern:

4 × 2 + 3 = 11

11 × 3 - 2 = 31

31 × 2 + 3 = 65

65 × 3 - 2 = 193

193 × 2 + 3 = 389

8. **Option (1) is correct.**

The pattern is:

(1<sup>st</sup> number - 2<sup>nd</sup> number)<sup>2</sup> × 2 = 3<sup>rd</sup> number.

(24, 10, 392) : (24 - 10)<sup>2</sup> × 2 = 14<sup>2</sup> × 2 = 196 × 2 = 392

From option 1: (29, 18, 242) (29 - 18)<sup>2</sup> × 2 = 11<sup>2</sup> × 2 = 121 × 2 = 242

From option 2: (21, 18, 234) (21 - 18)<sup>2</sup> × 2 = 3<sup>2</sup> × 2 = 9 × 2 = 18 ≠ 234

From option 3: (26, 12, 369) (26 - 12)<sup>2</sup> × 2 = 14<sup>2</sup> × 2 = 196 × 2 = 392 ≠ 369

From option 4: (27, 15, 480) (27 - 15)<sup>2</sup> × 2 = 12<sup>2</sup> × 2 = 144 × 2 = 288 ≠ 480

9. **Option (1) is correct.**

In this type of problem, we will find the common letter or number in both the cubes and then write them in the clockwise direction as shown below:

9 O E  
9 I U

From the above figure, we can say, E is the opposite to the letter U.

10. **Option (2) is correct.**

When we place a mirror on the line PQ, then letters that appear on the left will appear on the right side and the letters that appear on the right side will appear on the left. The letter Q appearing on the extreme right end will shift to the extreme left end and tail of Q will also appear on the left, meaning it will not remain the same after shifting; similarly, T will appear on the extreme right end, etc.

11. **Option (3) is correct.**

The pattern is:

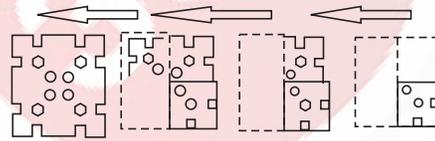
17<sup>2</sup> + 4 = 293

21<sup>2</sup> + 4 = 445

Similarly,

22<sup>2</sup> + 4 = 488

12. **Option (3) is correct.**



The process of unfolding the paper is shown above.

13. **Option (2) is correct.**

By taking options, we get

60 ÷ 2 + 3 × 6 - 5

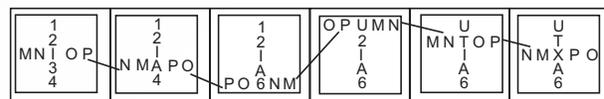
= 30 + 18 - 5

= 48 - 5

= 43

Hence, LHS = RHS.

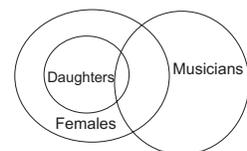
14. **Option (3) is correct.**



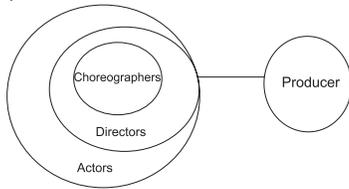
In the above figure, MN will be written as NM and then shift to the right position. Similarly, OP will be written as PO and then will be shifted to the left, etc. In the answer figure, we should have PO on the right side and NM on the left side.

15. **Option (4) is correct.**

We know that all daughters are females but it is not necessary that all females are musicians, So some musicians can be daughters.



16. Option (3) is correct.



From the above diagram, all conclusions follow.

17. Option (2) is correct.

Chisel is a tool used by a sculptor, Scalpel is used by a surgeon, and anvil is a tool used by a blacksmith.

18. Option (3) is correct.

The pattern is:

L	+2	N	+3	Q	opposite letter	J
B	+2	D	+3	G	opposite letter	T
H	+2	J	+3	M	+3	P
T	+2	V	+3	Y	opposite letter	B

Hence, option doesn't follow the same pattern, which is the correct answer.

19. Option (4) is correct.

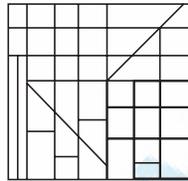
The pattern is:

C	-1	B	-1	A	-1	Z	-1	Y
M	+2	O	+2	Q	+2	S	+2	U
Q	-3	N	-3	K	-3	H	-3	E
R	+4	V	+4	Z	+4	D	+4	H

Hence, YUEH is the correct answer.

20. Option (1) is correct.

The figure in option (1) is shown embedded in the above figure.



21. Option (2) is correct.

Seven years from now, Anamika will be as old as Malini was 4 years ago.

$$A + 7 = M - 4$$

$$M = A + 11$$

$$S = 2 \text{ years}$$

And, Srinidhi was born 2 years ago. The average age of Anamika, Malini and Srinidhi 10 years from now will be 33 years.

$$\frac{A + M + S + 30}{3} = 33$$

$$A + M + S + 30 = 33 \times 3$$

$$A + M + S = 99 - 30$$

$$A + M + S = 69$$

Now, by substituting the above values,

$$A + (A + 11) + 2 = 69$$

$$2A + 13 = 69$$

$$A = 56 \div 2$$

$$A = 28 \text{ years}$$

Hence, the present age of Anamika is 28 years.

Or using the option, it can be done. Assuming Anamika's age from the options, we will get 28 as answer.

Let,  $A = 28$

Then,  $M = 28 + 4 + 7 = 39$

$S = 2$

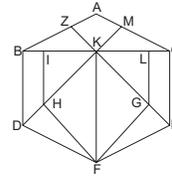
Now, after 10 years their age will be

$$28 + 39 + 2 + 30 = 99$$

Hence, average will be  $\frac{99}{3} = 33$  which is the correct and

28 is the correct answer.

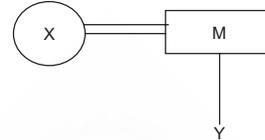
22. Option (1) is correct.



ABC, BKD, BZK, MKC, KCE, IKH, KLG, KFE, KHE, KDE, KGF, HDE, GEF

Hence, 13 triangles can be made out of the given figure.

23. Option (1) is correct.



In the above blood relation tree, it clearly shows that X is the mother of Y

24. Option (4) is correct.

P is the first letter of every word so we will check for the 2<sup>nd</sup> word which is r, a, r, a, a so it means the word with 2<sup>nd</sup> letter as r cannot be the first letter. Now, 2, 4, 5 can be the first word. Now, check for the 3<sup>rd</sup> letter which is l, t, r and l comes before both t and r so 1<sup>st</sup> word will be 2. The 2<sup>nd</sup> word will now be 5, and the third word will be 4, and so on.

25. Option (2) is correct.

(The sum of the alphabets in the opposite positional values)  $\times$  (Number of vowels in word)

VIRTUAL is coded as 201

Number of vowels in the given word = 3. (I, U, E)

Letter	Opposite Letter	Code of Letters
V	E	5
I	R	18
R	I	9
T	G	7
U	F	6
E	V	22

$$\text{Sum} = 5 + 18 + 9 + 7 + 6 + 22 = 67$$

$$67 \times 3 = 201$$

Similarly,

PROFANE = ?

Letter	Opposite Value
P	11
R	9
O	12
F	21
A	26
N	13
E	22

$$= 11 + 9 + 12 + 21 + 26 + 13 + 22 = 114 \times 3 = 342$$

**General Awareness**

26. Option (2) is correct.

Article 66 of the Constitution of India states the manner of election of the Vice President. Article 63 of the Indian Constitution states that "There shall be a Vice President of India." Article 66(1) states that the Vice President shall be elected by the members of an electoral college consisting of the members of both Houses of Parliament.

27. Option (4) is correct.

A bridge is associated with the Ruia Gold Cup. The Basalat Jha Trophy, Holkar Trophy, Ruia Gold Cup, and Singhania Trophy are bridge trophies. Agarwal Cup, Amrit Diwan Cup,

Asia Cup, Australasia Cup, Chadha Cup, European Cup, and Harilela Cup are badminton trophies. Moment Cup Gold and Moment Cup Silver are swimming trophies.

**28. Option (3) is correct.**

Galena is not used in the production of toothpaste. Galena is the most important lead ore. As a by-product, silver is frequently produced. The majority of lead is used in the production of batteries, but significant amounts are also used in the production of lead sheets, pipes and shots. Galena has a cubic lattice structure and is a silver source. The lead-in Galena is toxic if inhaled or ingested from dust particles, but if there is no lead dust present, the mineral or rock containing the mineral can be handled safely.

**29. Option (2) is correct.**

The Wodeyars' former residence, Mysore Palace. The Palace, built in Indo-Saracenic style with domes, turrets, arches, and colonnades, is frequently compared to Britain's Buckingham Palace due to its grandeur. It was designed by Henry Irwin, the Madras state's British consultant architect. The palace's main attractions are the Golden Royal Elephant Throne, the Durbar Hall, and the Kalyan Mandap (wedding hall).

**30. Option (3) is correct.**

Curzon Wylie was assassinated in London on July 1, 1909, by Indian revolutionary Madan Lal Dhingra, a member of India House. Sir William Hutt Curzon Wylie served in the British Indian army. Madan Lal Dhingra claimed that he murdered Curzon-Wylie as a patriotic act and in retaliation for the British government's inhumane treatment of Indians in India.

**31. Option (2) is correct.**

The Government of India Act of 1935 established federalism and provincial autonomy in the legislature, as well as provisions for the distribution of legislative powers between the centre and the provinces. The British Parliament passed the Government of India Act in August 1935, and it went into effect in 1937. There are 321 sections and 10 schedules. This was the British Parliament's longest act to date, and it was later divided into two parts: the Government of India Act 1935 and the Government of Burma Act 1935.

**32. Option (3) is correct.**

Lakshya Sen is an Indian badminton player who has won numerous tournaments and medals in all of his competitions. He also received a gold medal at the CWG 2022, which was held in Birmingham. Sen's athletic ability has made him famous at such a young age. Sen has made India very proud with all of his achievements. He is not only good in his field, but he is also very focused on his goal.

**33. Option (2) is correct.**

Lord Jagannath, the incarnation of Lord Krishna, has been a major inspiration for Pattachitra art. It is a broad term for traditional cloth-based scroll painting, which is prevalent in eastern Indian states such as Odisha and West Bengal. It is well-known for its intricate details as well as the mythological narratives and folktales inscribed within it. This art form dates back to the 12th century. The name Pattachitra is derived from the Sanskrit language words 'patta' (cloth) and 'Chitra' (the picture). Its style is a blend of folk and classical elements, with a preference for folk forms.

**34. Option (4) is correct.**

Thrust is defined as the force acting perpendicular to an object's surface. Thrust is calculated as (Thrust = Pressure  $\times$  Area). The amount of matter in a substance is defined as its mass. Density is defined as the mass per unit volume ratio. A liquid, solid, or gas's volume is the amount of three-dimensional space it occupies.

**35. Option (2) is correct.**

India and Afghanistan sign the Lalander (Shatoot) Dam agreement. It costs nearly \$300 million and is part of India

and Afghanistan's New Development Partnership. Its goal is to provide safe drinking water to Kabul City, irrigation water to surrounding areas, rehabilitate the existing irrigation and drainage network, aid in flood protection and management efforts in the area, and provide electricity to the region. This is India's second major dam in Afghanistan, following the India-Afghanistan Friendship Dam (Salma Dam), which was dedicated in June 2016.

**36. Option (3) is correct.**

Veer Surendra Sai was a member of the Sambalpur Freedom Fighters in Odisha. He gave his life in the fight against the British East India Company. He was born in 1809 in Khinda, a small town about 21 miles from Sambalpur. On February 28, 1884, he died in Asirgarh Jail. Surendra Sai was a direct descendant of Madhukar Sai and thus had the legal right to be crowned as King of Sambalpur following the death of King Maharaja Sai in 1827.

**37. Option (3) is correct.**

A seismic wave is an elastic wave produced by an impulse such as an earthquake or an explosion. Seismic waves are energy waves that travel through the layers of the Earth as a result of earthquakes, volcanic eruptions, magma movement, large landslides, and large man-made explosions that emit low-frequency acoustic energy. Earthquakes are typically caused by underground rock suddenly breaking and rapid movement along a fault. This sudden release of energy generates seismic waves, which cause the ground to shake. When the fault stops moving, the earthquake is over. During an earthquake, seismic waves are produced. Primary (P = pressure) waves, Secondary (S = shear), and Surface waves are the three basic types of seismic waves.

**38. Option (2) is correct.**

A.R. Rahman has been named the brand ambassador for the BAFTA (British Academy of Film and Television Arts) 'Breakthrough Initiative', which will launch in November 2020. The initiative, which is supported by Netflix, aims to identify, celebrate, and support up to five Indian films, games, or television talent. A jury of British and Indian industry experts will select five talents from across India to participate in the year-long mentoring and guidance programme as part of BAFTA Breakthrough India. Participants will receive one-on-one mentoring, global networking opportunities and 12 months of free access to BAFTA events and screenings.

**39. Option (1) is correct.**

The Rowa Wildlife Sanctuary (RWS) is located in the north Tripura district and is only 0.86 square kilometres in size. It is home to 150 different bird species, wild beasts and primates. It is the ideal destination for tourists who are interested in eco-tourism. The forest is abundant in economic plants such as medicinal and aromatic plants, treat fodders, fruit-bearing trees, oil-bearing trees, spices, orchids, and other ornamental plants. Tripura is also home to another Wildlife Sanctuary, Rajbari National Park.

**40. Option (4) is correct.**

In December 2020, Shashi Shekhar Vempati was elected Vice President of the Asia Pacific Broadcasting Union (ABU). Shashi Shekhar Vempati, the CEO of Prasar Bharati, has been elected as the Vice President of the Asia Pacific Broadcasting Union for a three-year term. Prasar Bharati is the largest public broadcasting agency in India. The Asia Pacific Broadcasting Union, headquartered in Kuala Lumpur, Malaysia, is one of the world's largest broadcasting organisations.

**41. Option (3) is correct.**

The 'Love Brigade' campaign seeks to educate the public about the HIV/AIDS epidemic. It began in Mizoram due to the state's high prevalence of HIV/AIDS. MSACS (Mizoram State AIDS Control Society) launched this campaign on World AIDS Day with a fleet of 500 bikes and taxis. Collaboration

partners include the AIDS Healthcare Foundation (AHF) and the Mizoram Taxi Association. "Love condoms," the condoms that will be kept in the front seat's back pocket with the little flap. According to AHF, the prevalence rate among adults is 2.04%, which is 10% higher than the national HIV prevalence of 0.22%. The state's new infection rate is 1.32%, which is 20% higher than the national average of 0.07%.

**42. Option (4) is correct.**

RBL Bank, formerly Ratnakar Bank, is a private Indian bank headquartered in Mumbai. Babgonda Bhujgonda Patil from Sangli and Gangappa Siddappa Chougule from Kolhapur founded it on August 6, 1943, with two branches in Kolhapur and Sangli. The Reserve Bank of India granted RBL Bank a banking licence in 1970. The bank's name was changed to RBL Bank Limited in August 2014. Mr Vishwavir Ahuja is the bank's current MD and CEO as of October 2021.

**43. Option (1) is correct.**

Samuel Hahnemann developed homoeo-pathy, the most well-known alternative medicine to emerge from Europe, in 1796. Christian Friedrich Samuel Hahnemann was born in Meissen, Saxony, on April 10, 1755, and died on July 2, 1843. He was a German doctor. On August 10, 1779, he received his MD from the University of Erlangen. By attributing the cause of disease to the host's internal environment, Samuel Hahnemann helped to reform 18th-century medical practises, establishing the fundamental tenet that every individual reacts differently in health and disease.

**44. Option (2) is correct.**

A Lift channel is a canal channel in which water is forced to flow against the slope of land due to upliftment. When the primary source is lower than the supply level. After that, water is supplied mechanically. This is referred to as lift irrigation. Lift irrigation is a method of irrigation in which water is transported by external energy rather than natural flow (as in gravity-fed canal systems). This energy is provided by fuel-based or electric power via pumps or other mechanical means.

**45. Option (1) is correct.**

R.S. Sharma has been named the new CEO of Ayushman Bharat, also known as the Pradhan Mantri Jan Arogya Yojana, and the National Health Authority (NHA). He succeeded Dr Indu Bhushan, who has led the Ayushman Bharat scheme since its inception in 2018. The NHA was taken over by R.S. Sharma, a former chairman of the Telecom Regulatory Authority of India (TRAI), on February 1. The National Health Authority is the apex body in charge of implementing India's flagship public health insurance/assurance scheme, Ayushman Bharat Pradhan Mantri Jan Arogya Yojana.

**46. Option (2) is correct.**

In February 2021, the state of Madhya Pradesh launched the SAANS (Social Awareness and Action to Neutralize Pneumonia Successfully) campaign. Madhya Pradesh's health department launched this campaign on February 5, 2021. Dr Prabhuram Chaudhari, hon'ble Health Minister, Mr Mohammad Suleman (Additional Chief Secretary GoM), Dr Sanjay Goyal, Commissioner Health, and Ms Chhavi Bhardwaj launched the campaign (Mission Director, NHM, MP). The main goal of the campaign is to reduce infant mortality due to pneumonia; a strategy is being developed under the social awareness campaign, in which medical staff is being trained.

**47. Option (3) is correct.**

The novel 'Rangbhumi: The Arena of Life' was written by Munshi Premchand. Premchand's Rangbhoomi (The Arena of Life) is a Hindi language novel in which an idealist protagonist is inspired by Gandhian values. Premchand treats the tricky ground of tensions between rulers and ruled in this epic novel set in pre-independence India. Rangbhumi celebrates the unbreakable spirit of the common man by capturing the travails and traumas of peasant society. Rangbhumi

was the result of both personal and political challenges. The original Hindi novel, which was published in 1925, received critical acclaim for its strong characterisation and realistic depiction of the times. Munshi Premchand's works include Karmabhoomi, Kafan, Godan, Poos Ki Raat, Nirmala, Thakur Ka Kuan, Eidgah, Namak Ka Daroga and others.

**48. Option (4) is correct.**

Rama Mohan Rao Amara has been named MD and CEO of SBI Card. His appointment is for two years, beginning on January 30, 2021. Rajnish Kumar is an Indian banker who previously served as the Chairman of the State Bank of India. He was appointed chairman of the State Bank of India on October 7, 2017, and his three-year term ended on October 6, 2020. Ashwini Kumar Tewari is a career banker who began his career with SBI as a Probationary Officer in 1991. He is currently the Managing Director of the State Bank of India, where he is in charge of International Banking, Information Technology, and the bank's Associates and Subsidiaries. (Oct 2021). Swaminathan Janakiraman is the SBI's MD (Oct 2021).

**49. Option (2) is correct.**

Babur established the Mughal Dynasty in the 16th century by conquering Northern India from his base in Kabul. Babur was a warrior chieftain from what is now known as Uzbekistan who defeated Sultan of Delhi Ibrahim Lodhi in the first battle of Panipat. Babur ruled for four years, from 1526 to 1530. The Mughal Dynasty reigned until 1720.

**50. Option (4) is correct.**

Gopurams can be found at the Shiva Temple in Chidambaram. A gopuram or gopura is a monumental, ornate entrance tower at the entrance to a Hindu temple. Chidambaram Nataraja Temple is a Hindu temple dedicated to Lord Nataraja, who is one of Lord Shiva's forms as the Lord of Dance. This temple is in the Indian state of Tamil Nadu. This temple has ancient roots, and there was a Shiva shrine on the site when the town was called Thillai.

### Quantitative Aptitude

**51. Option (1) is correct.**

$$\begin{aligned} \text{We have, } 16x^2 + y^2 &= 48 && \dots(1) \\ xy &= 2 && \dots(2) \end{aligned}$$

from Eq. (1),

$$(4x)^2 + (y)^2 + 8xy - 8xy = 48$$

$$\Rightarrow (4x + y)^2 - 8 \times 2 = 48$$

$$\Rightarrow (4x + y)^2 = 48 + 16 = 64$$

$$\Rightarrow 4x + y = \sqrt{64}$$

$$\Rightarrow 4x + y = 8$$

cubing both the sides,

$$\Rightarrow (4x + y)^3 = 512$$

$$\Rightarrow 64x^3 + y^3 + 12xy(4x + y) = 512$$

$$\Rightarrow 64x^3 + y^3 + 12 \times 2 \times 8 = 512$$

$$\Rightarrow 64x^3 + y^3 = 512 - 192 = 320$$

**52. Option (3) is correct.**

Average production of all flavours in 2012

$$= \frac{50 + 50 + 65}{3} = 55$$

Average production of flavours A in 2012, 2013 and 2014

$$= \frac{50 + 45 + 75}{3} = \frac{170}{3}$$

Average production of flavours C in 2012, 2013 and 2014

$$= \frac{65 + 70 + 80}{3} = \frac{215}{3}$$

$$\text{Required difference} = \frac{215}{3} - \frac{170}{3} = \frac{45}{3} = 15$$

So, required ratio = 55 : 15 = 11 : 3

53. Option (1) is correct.

We have,  $x - \frac{1}{x} = 5$   
cubing both sides,

$$\Rightarrow x^3 - \frac{1}{x^3} - 3\left(x - \frac{1}{x}\right) = 125$$

$$\Rightarrow x^3 - \frac{1}{x^3} - 3 \times 5 = 125$$

$$\Rightarrow x^3 - \frac{1}{x^3} = 140$$

Now, divide both numerator and denominator of  $\frac{x^3 - 5x^3 - 1}{x^6 + 7x^3 - 1}$  by  $x^3$ .

$$\begin{aligned} & \frac{x^3 - 5 - \frac{1}{x^3}}{x^3 + 7 - \frac{1}{x^3}} \\ &= \frac{140 - 5}{140 + 7} = \frac{135}{147} = \frac{45}{49} \end{aligned}$$

54. Option (4) is correct.

We have,

$$x - y = 11 \quad \dots(1)$$

$$\Rightarrow \frac{1}{x} - \frac{1}{y} = \frac{11}{24}$$

$$\Rightarrow \frac{y - x}{xy} = \frac{11}{24}$$

$$\Rightarrow \frac{-11}{xy} = \frac{11}{24}$$

$$\Rightarrow xy = -24$$

Cubing both sides of Eq. (1),

$$(x - y)^3 = 1,331$$

$$\Rightarrow x^3 - y^3 - 3xy(x - y) = 1,331$$

$$\Rightarrow x^3 - y^3 + 3 \times 24(11) = 1,331$$

$$\Rightarrow x^3 - y^3 + 792 = 1,331$$

$$\Rightarrow x^3 - y^3 = 1,331 - 792 = 539$$

$$\text{So, } x^3 - y^3 + x^2y^2 = 539 + 576 = 1,115$$

55. Option (2) is correct.

Let the length of a rectangle =  $x$

The breadth of the rectangle =  $y$

So, area  $A_1 = xy$

New length =  $3x$  and new breadth =  $y/2$

$$\text{So, new area } A_2 = \frac{3}{2} xy$$

$$\text{Required ratio} = xy : \frac{3}{2} xy = 2 : 3$$

56. Option (2) is correct.

$$\text{We have, } 2 \cos^2\theta = 3 \sin \theta$$

$$\Rightarrow 2(1 - \sin^2\theta) = 3 \sin \theta$$

$$\Rightarrow 2 - 2 \sin^2\theta = 3 \sin \theta$$

$$\Rightarrow 2 \sin^2\theta + 3 \sin \theta - 2 = 0$$

$$\Rightarrow (\sin \theta + 2)(2 \sin \theta - 1) = 0$$

As given,  $0^\circ < \theta < 90^\circ$

$$\text{So, } \sin \theta = \frac{1}{2} \text{ or } \theta = 30^\circ$$

$$\text{Now, } \sec^2\theta - \tan^2\theta + \cos^2\theta$$

$$\sec^2 30^\circ - \tan^2 30^\circ + \cos^2 30^\circ$$

$$\Rightarrow \left(\frac{2}{\sqrt{3}}\right)^2 - \left(\frac{1}{\sqrt{3}}\right)^2 + \left(\frac{\sqrt{3}}{2}\right)^2$$

$$\Rightarrow \frac{4}{3} - \frac{1}{3} + \frac{3}{4} = \frac{7}{4}$$

57. Option (4) is correct.

$$\text{We have, } OB = 7 \text{ cm}$$

$$\angle OBA = 60^\circ$$

$$\angle DOC = 60^\circ$$

From the above diagram,

In  $\triangle COD$ ,  $OD = OC$

$$\text{So, } \angle ODC = \angle OCD = \frac{180 - 60}{2} = 60^\circ$$

As we know  $\angle ACD = 90^\circ$

So,  $\angle ACO = 90^\circ - 60^\circ = 30^\circ$

In  $\triangle OBC$ ,  $\angle BOC = 180^\circ - 120^\circ - 30^\circ = 30^\circ$

By using sin law in  $\triangle OBC$ ,

$$\Rightarrow \frac{OB}{\sin 30} = \frac{BC}{\sin 30}$$

$$\Rightarrow BC = 7 \text{ cm}$$

58. Option (1) is correct.

Sale price of each article = ₹ 10,591

$$\text{So, cost price of 1st article } CP_1 = 10,591 \times \frac{100}{119} = 8,900$$

$$\text{And cost price of 2nd article } CP_2 = 10,591 \times \frac{100}{89} = 11,900$$

Total cost price of both articles = 8,900 + 11,900 = 20,800

And total sale price of both articles = 10,591 + 10,591 = 21,182

$$\text{So, profit percentage} = \frac{21,182 - 20,800}{20,800} \times 100 = \frac{382}{20,800} \times 100 = 1.8\%$$

59. Option (4) is correct.

Let the MRP = ₹  $x$

As given in the question,

$$x \times \frac{88}{100} = 176$$

$$\Rightarrow x = 176 \times \frac{100}{88} = 200$$

So, MRP = ₹ 200

$$\text{Now, cost price of the article} = 200 \times \frac{100}{125} = ₹ 160$$

60. Option (4) is correct.

Total students = 90

$$\text{Number of girls} = 90 \times \frac{60}{100} = 54$$

Number of boys = 90 - 54 = 36

We have,

Average marks of boys = 63

Total marks of boys = 63 × 36 = 2,268

Average marks of girls = 70

Total marks of girls = 70 × 54 = 3,780

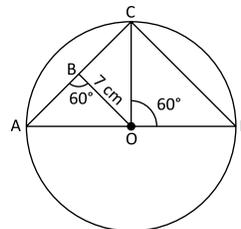
$$\text{So, average marks of whole class} = \frac{2,268 + 3,780}{90} = 67.2$$

61. Option (3) is correct.

$$\text{We have, } \frac{2 \sin^2 30^\circ \cdot \tan 60^\circ - 3 \cos^2 60^\circ \cdot \sec^2 30^\circ}{4 \cot^2 45^\circ - \sec^2 60^\circ + \sin^2 60^\circ + \cot^2 90^\circ}$$

$$= \frac{2 \times \frac{1}{4} \times \sqrt{3} - 3 \times \frac{1}{4} \times \frac{4}{3}}{4 - 4 + \frac{3}{4} + 0}$$

$$= \frac{\frac{\sqrt{3}}{2} - 1}{\frac{3}{4}} = \frac{\sqrt{3} - 2}{\frac{2 \times 3}{4}} = \frac{2(\sqrt{3} - 2)}{3}$$



**62. Option (1) is correct.**

Average number of females in all the organisations

$$= \frac{300 + 275 + 250 + 200 + 125}{5}$$

$$= 230$$

Average number of males in all the organisations

$$= \frac{250 + 225 + 325 + 275 + 150}{5}$$

$$= 245$$

Required ratio = 230 : 245 = 46 : 49

**63. Option (1) is correct.**

Given 5 digit number = 247xy

LCM of (3, 7, 11) = 231

So, 5 digit number which is divisible by 3, 7 and 11

$$= 231 \times 107 = 24,717$$

Now,  $x = 1$  and  $y = 7$ So,  $2y - 8x = 2 \times 7 - 8 \times 1 = 6$ **64. Option (1) is correct.**

We have, AB : AC = 5 : 2

$$BC = 9 \text{ cm}$$

By external angle bisector theorem,

$$\Rightarrow \frac{AB}{AC} = \frac{BE}{CE}$$

$$\Rightarrow \frac{5}{2} = \frac{9 + CE}{CE}$$

$$\Rightarrow 5CE = 18 + 2CE$$

$$\Rightarrow 3CE = 18$$

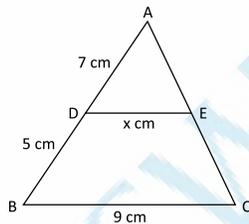
$$\Rightarrow CE = 6 \text{ cm}$$

**65. Option (1) is correct.**

We have,

$$\Rightarrow \frac{8 \sin 30 \cdot \sin^2 60 - 4 \sin 90 - \sec^2 45}{\tan^2 45 - \cot^2 30}$$

$$= \frac{8 \times \frac{1}{2} \times \frac{3}{4} - 4 \times 1 - 2}{1 - 3} = \frac{3 - 4 - 2}{-2} = \frac{3}{2}$$

**66. Option (2) is correct.**Let  $DE = x \text{ cm}$ We have,  $\angle ADE = \angle B$ So, line DE is parallel to line BC. Then  $\angle AED$  will also be equal to  $\angle C$ .BY A-A-A property,  $\triangle ABC$  and  $\triangle ADE$  are similar triangles.

$$\text{So, } \frac{AD}{AB} = \frac{DE}{BC}$$

$$\Rightarrow \frac{7}{12} = \frac{x}{9}$$

$$\Rightarrow x = 5.25$$

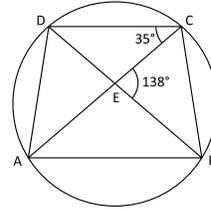
$$\text{So, } DE = 5.25 \text{ cm}$$

**67. Option (3) is correct.**

Number of students whose weight is less than 50 kg = 20 + 45 = 65

Number of students whose weight is more than 60 kg = 40 + 5 = 45

Required ratio = 65 : 45 = 13 : 9

**68. Option (1) is correct.** $\angle BEC$  and  $\angle CED$  are on the same line,

$$\angle BEC = 138^\circ$$

$$\angle CED = 180^\circ - 138^\circ = 42^\circ$$

In  $\triangle CED$ ,  $\angle CED = 42^\circ$  and  $\angle ECD = 35^\circ$ So,  $\angle CDE = 180^\circ - 35^\circ - 42^\circ = 103^\circ$  $\angle BAC$  and  $\angle BDC$  are on the same arc,So,  $\angle BAC = \angle BDC = 103^\circ$ **69. Option (1) is correct.**Let the principal amount = ₹  $x$ Earning for 1st two years =  $(2 \times 8) = 16\%$  of  $x$ Earning for next four years =  $(4 \times 10) = 40\%$  of  $x$ Earning for further three years =  $(3 \times 12) = 36\%$  of  $x$ Total earning =  $(16\% + 40\% + 36\%)$  of  $x = 92\%$  of  $x$ 

As per the question,

$$92\% \text{ of } x = 18,358.60$$

$$x = 18,358.60 \times \frac{100}{92} = 19,955$$

So, invested amount = ₹ 19,955

**70. Option (2) is correct.**Total number of candidates enrolled in institutes Q, R and S together =  $(30\% + 18\% + 12\%)$  of 7,500

$$= 60\% \text{ of } 7,500 = 4,500$$

Total number of candidates passed in institutes Q, R and S together

$$= (24\% + 18\% + 24\%) \text{ of } 4,000$$

$$= 66\% \text{ of } 4,000 = 2,640$$

$$\text{Required ratio} = 4,500 : 2,640$$

$$= 450 : 264 = 75 : 44$$

**71. Option (2) is correct.**

We have,

$$\Rightarrow \frac{A}{B} = \frac{5}{8} \quad \dots(1)$$

$$\Rightarrow \frac{A+5}{B+5} = \frac{2}{3}$$

$$\Rightarrow 3A + 15 = 2B + 10$$

From Eq. (1),

$$3 \times \frac{5}{8} B + 15 - 10 = 2B$$

$$\Rightarrow 15B + 40 = 16B$$

$$\Rightarrow B = 40$$

From Eq. (1),  $A = 25$ 

$$\text{Required sum} = 25 + 40 = 65$$

**72. Option (2) is correct.**

We have,

$$3 \div 18 \text{ of } 3 \times 6 - 22 \times 6 \div 18 - 3 \div 2 + 10 - 3 \div 9 \text{ of } 3 \times 9$$

$$= 3 \div 54 \times 6 - 22 \times 6 \div 18 - 3 \div 2 + 10 - 3 \div 27 \times 9$$

$$= \frac{1}{18} \times 6 - 22 \times \frac{1}{3} - \frac{3}{2} + 10 - \frac{1}{9} \times 9$$

$$= \frac{1}{3} - \frac{22}{3} - \frac{3}{2} + 10 - 1$$

$$= 9 - 7 - \frac{3}{2} = \frac{1}{2}$$

**73. Option (4) is correct.**

We have,

$$3 \text{ units work} = 18 \times 8 \times 10 = 1,440$$

$$1 \text{ unit work} = \frac{1,440}{3} = 480 \quad \dots(1)$$

Let number of days required by 25 persons =  $x$  days

$$\text{Now, 5 units work} = 25 \times x \times 6 = 150x$$

$$\text{So, 1 unit work} = \frac{150x}{5} = 30x \quad \dots(2)$$

From Eqs. (1) and (2),

$$30x = 480$$

$$\Rightarrow x = 16$$

$\therefore$  Number of days required by 25 persons = 16 days

**74. Option (4) is correct.**

We have,

$\therefore$  Length of train = 240 m

$$\text{And speed of man} = 6 \text{ km/h} = 6 \times \frac{5}{18} = \frac{5}{3} \text{ m/s}$$

Let speed of train =  $x$  m/s

$$\text{As per the question, } 240 = \left(x - \frac{5}{3}\right) \times 9$$

$$\Rightarrow \left(x - \frac{5}{3}\right) = \frac{240}{9} = \frac{80}{3}$$

$$\Rightarrow 3x - \frac{5}{3} = 80$$

$$\Rightarrow 3x = 85$$

$$\Rightarrow x = \frac{85}{3}$$

The distance covered by train =  $240 + 372 = 612$  m

$$\text{Required time to pass the tunnel} = \frac{612}{\frac{85}{3}} = 21.6 \text{ s}$$

**75. Option (4) is correct.**

Let Radha's income = ₹ 100

Her saving = ₹ 25

And expenditure = ₹ 75

After increasing her expenditure by 20%,

$$\text{Her new expenditure} = 75 \times \frac{120}{100} = 90$$

After increasing her income by 29%,

$$\text{Her new income} = 100 \times \frac{129}{100} = 129$$

Now, saving =  $129 - 90 = 39$

$$\text{Percentage increase in saving} = \frac{39 - 25}{25} \times 100 = 56\%$$

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**English Comprehension**


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**76. Option (1) is correct.**

- (1) What is asked here is an indefinite number of examples.
- (2) The sentence uses the adjective 'so many', which could either mean a large number or an unspecified number. Neither of the meanings fit in the context.
- (3) 'Some' and 'few' have similar meanings and hence, will cause redundancy.
- (4) 'Some' is used when an indefinite number is referred to while 'many' is used to refer to a large indefinite number.

**77. Option (4) is correct.**

Close ended questions or yes/no are reported using if/whether where the questions don't have interrogative words like who, when, why, and when. In case the interrogative words are present, neither if nor whether is added to the reported

speech. Based on the tense used in the reporting verb, the tense of the sentence will change from simple present to simple past or past to past perfect.

- (1) This sentence is in past perfect tense.
- (2) This sentence is in future tense.
- (3) This sentence is in present simple tense.
- (4) This sentence is in simple past tense.

**78. Option (2) is correct.**

- (1) 'Terrorism' means the unlawful use of violence and intimidation, especially against civilians, in the pursuit of political aims.
- (2) The correct spelling of the word is 'allotment', which means a plot of land rented by an individual for growing vegetables or flowers.
- (3) 'Borrow' is to take and use something belonging to someone else with the intention of returning it.
- (4) 'Allowance' is the amount of something that is permitted, especially within a set of regulations or for a specified purpose.

**79. Option (1) is correct.**

The sentence is grammatically correct.

**80. Option (2) is correct.**

'To walk on air' is to feel elated or very happy.

**81. Option (2) is correct.**

'To take a chill pill' is to calm down or relax.

**82. Option (3) is correct.**

'Prompt' is to cause or bring about an action or feeling.

- (1) 'Slow' means moving or operating, or designed to do so, only at a low speed.
- (2) 'Lengthy' is to be of considerable or unusual length.
- (3) 'Quick' means moving fast or doing something in a short time.
- (4) 'Gradual' means taking place or progressing slowly or by degrees.

**83. Option (3) is correct.**

- (1) 'Sincere' is to be free from pretence or deceit.
- (2) 'Grievance' is a real or imagined cause for complaint, especially unfair treatment.
- (3) The correct spelling of the word is 'leisure', which means free time.
- (4) 'Seize' is to take hold of something suddenly and forcibly.

**84. Option (1) is correct.**

The sentence talks of the result of the help received from his relatives.

- (1) 'Supported' is to give assistance to, especially financially.
- (2) 'Passed' means move or cause to move in a specified direction. The difficult times were passed and not him.
- (3) 'Approved' means officially agreed or accepted as satisfactory.
- (4) 'Allowed' is to let someone have or do something.

**85. Option (2) is correct.**

Sentence C will begin the paragraph as it talks of subject of the paragraph – International Tiger Day. Sentence D tells us the basic details, i.e., the date and objective of the International Tiger Day. So, CD is a mandatory pair, which is present only in option (2).

**86. Option (3) is correct.**

'Putrefy' is to decay or rot, producing a strong, unpleasant smell.

- (1) 'Destroy' is to end the existence of something by damaging or attacking it.
- (2) 'Contaminate' is to make something impure by exposure to or addition of a poisonous or polluting substance.
- (3) 'Combine' is to join or merge to form a single unit or substance.

It is the closest antonym of the word from the given options.

- (4) 'Decompose' is to decay or rot.

**87. Option (4) is correct.**

The subject and object are interchanged. If the active sentence is in past simple, the verb used in the passive sentence is 'was/ were + past participle'.

- (1) The sentence is in present simple passive tense.
- (2) The sentence is in present continuous passive tense.
- (3) The sentence is in present perfect passive tense.
- (4) The sentence is in past simple passive tense.

**88. Option (1) is correct.**

Sentence B introduces a man and his daughters. So, it should begin the paragraph. Hence, we can eliminate options (3) and (4). Sentence D mentions the father visiting one daughter while sentence C talks of the father visiting the other daughter. The remaining sentence A talks of one of the daughter's reply. So, it could either come after sentence D or sentence C. Now, let's look at the remaining options. Option (1) can be correct because sentence C is after sentence D and sentence A comes after sentence D. Option (2) is incorrect as sentence C comes before sentence D, and it is against the order of introduction given in sentence B. So, the correct sequence is BDAC.

**89. Option (2) is correct.**

'Dedicated' is to be devoted to a task or purpose.

- (1) 'Tedious' is to be tiresome or monotonous.
- (2) 'Committed' is to be dedicated.
- (3) 'Dreary' is depressingly dull and bleak or repetitive.
- (4) 'Boring' means not interesting.

**90. Option (4) is correct.**

'Hope' is a feeling of expectation and desire for a particular thing to happen.

- (1) 'Chance' is a possibility of something happening.
- (2) 'Courage' is bravery.
- (3) 'Optimism' means hopefulness and confidence about the future or the success of something.
- (4) 'Doubt' refers to a feeling of uncertainty or lack of conviction. It is the antonym of the given word.

**91. Option (4) is correct.**

'Many' means a large number of. It is incorrect because of two reasons: Firstly, 'effort' is not a countable noun. Secondly, 'hardly' means barely or not much. So, it is not in line with the meaning of the sentence. The correct phrase will be 'any effort at all', which would mean that almost no effort was involved.

**92. Option (2) is correct.**

The sentence talks of either a positive or a negative trait of Gautam.

- (1) 'Trivialities' refers to lack of seriousness or importance
- (2) 'Aspirations' refers to a hope or ambition of achieving something.
- (3) 'Determinations' refers to the process of establishing something exactly by calculation or research.
- (4) 'Fivialities' refers to lack of seriousness.

**93. Option (1) is correct.**

- (1) 'Autonomy' is the right or condition of self-government.
- (2) 'Democracy' is a system of government by the whole population or all the eligible members of a state, typically through elected representatives.
- (3) 'Anarchy' is a state of disorder due to absence or non-recognition of authority or other controlling systems.
- (4) 'Monarchy' is a form of government with a monarch at the head.

**94. Option (4) is correct.**

- (1) 'Workshop' is a room or building in which goods are manufactured or repaired
- (2) 'Casting' refers to the making of an object by pouring molten metal or other material into a mould.

(3) 'Mill' is a building equipped with machinery for grinding grain into flour.

(4) 'Mint' is a place where money is coined, especially under state authority.

**95. Option (2) is correct.**

- (1) 'Against' means in opposition to. It is not used with the noun 'competition'.
- (2) 'Among' means occurring in or shared by some members of a group or community. It fits the context.
- (3) 'Along' is used to refer to the passage of time or the making of progress. It doesn't fit in the context.
- (4) 'Through' means moving in one side and out of the other side of an opening, channel, or location. It is not used with the noun 'competition'.

**96. Option (2) is correct.**

The sentence talks of communication being a connection between each of two or more people.

- (1) 'Every other' means each alternate in a series. It doesn't fit in the context.
- (2) 'Each other' is used to refer to each member of a group when each does something to or for other member.
- (3) 'One other' is not a correct phrase. It doesn't fit in the context. However, 'one another' means each other.
- (4) 'Some other' means another and not the same one. This again doesn't fit in the context.

**97. Option (4) is correct.**

The sentence talks of all the times that communication is used.

- (1) 'From' indicates the point of beginning and doesn't fit in the given context.
- (2) 'While' can refer to a period of time, but 'while work' is grammatically incorrect as both 'while' and 'work' are nouns.
- (3) 'On work' is not a correct phrase.
- (4) 'At work' means while being engaged in work.

**98. Option (4) is correct.**

The paragraph talks of communication between people in the first sentence itself. Option (3) is incorrect because 'ones' could refer to either people or things.

**99. Option (4) is correct.**

The sentence talks of the cause of communication issues.

- (1) 'About' is a preposition and cannot be used with another preposition.
- (2) 'Beside' is also a preposition.
- (3) 'Because' is a conjunction which shows a causal relationship.
- (4) 'Since' can either refer to time or cause. This option is incorrect because 'since' should always be followed by a clause, which is not present in this sentence.

**100. Option (2) is correct.**

The sentence suggests it is not necessary that one should know how to communicate in English just because they know how to speak English.

- (1) 'Lacking' refers to something that is absent. It is always used with the preposition 'in'.
- (2) 'Without' is a preposition and means in the absence of. It fits in the context.
- (3) 'Devoid' means entirely lacking or free from. It is always used with the preposition 'of', which is missing in the given sentence.
- (4) 'Minus' can be either used as preposition, meaning with the subtraction of, or as a noun, meaning disadvantage. Neither meaning fits in the given context.