ICET - 2004 PAPER

(BASED ON STUDENTS MEMORY)

Time : 2 Hours] [Max. Marks : 200

SECTION - A
ANALYTICAL ABILITY

Questions : 75] [Marks : 75

DATA SUFFICIENCY

Note : In questions numbered 1 to 20, a question is followed by data in the form of two statements labelled as I and II. You must decide whether the data given in the statements are sufficient to answer the question. Using the data make an appropriate choice from (1) to (4) as per the following guidelines :

a) Mark choice (1) If the statements I alone is sufficient to answer the question;
b) Mark choice (2) If the statements II alone is sufficient to answer the question;
c) Mark choice (3) If both the statements I and II are sufficient to answer the question but neither statement alone is not sufficient;
d) Mark choice (4) If both the statements I and II together are not sufficient to answer the question and additional data is required.

1. For given integers a and b, can we find integers x and y such that ax + by = 1? ( )

I) a = 75, b = 120 II) a = 286, b = 105

2. Let *a* and *b* be positive real numbers, is a > 1?

I) $\frac{1}{a}+\frac{1}{b}=1$ II) a + b > 1 ( )

3. What is $a_1 + a_2 + a_3 + a_4 + a_5$? ( )

I) $a_1 = 50$

II) a_1, a_2, a_3, a_4, a_5 are consecutive even integers

4. [illegible] ( )

I) $A=\begin{bmatrix}a & b\\ c & d\end{bmatrix}\neq\begin{bmatrix}0 & 0\\ 0 & 0\end{bmatrix}$

II) $A=\begin{bmatrix}a & b\\ c & d\end{bmatrix}\neq\begin{bmatrix}x & y\\ z & t\end{bmatrix}=\begin{bmatrix}1 & 0\\ 0 & 1\end{bmatrix}$

5. [illegible] $(a+b+c)\left[\frac{1}{a}+\frac{1}{b}+\frac{1}{c}\right]$?

I) $a^2+b^2+c^2>0$ II) a > 0, b > 0, c > 0 ( )

6. What is the value of $(a - b)^2$? ( )

I) a + b = 5 II) ab = 3

7. Is there a term independent of x in the expansion of $\left[x+\frac{1}{x^2}\right]^n$? ( )

I) n = 3k, k is a positive integer

II) n is an odd positive integer

8. What is the equation of the straight line ? ( )

I) Its slope is $\frac{1}{2}$

II) It is parallel to the line x – 2y + 8 = 0

9. Are the positive integers and b relatively prime?

I) There is a prime number dividing both a and b

II) The L.C.M. of and b is 24 ( )

10. What is the value of $a^3 + b^3 + c^3 - 3abc$? ( )

I) a = b II) c = 0

11. What is the present age of A ? ( )

I) Father of A was born on the 25th anniversary of India's Independence

II) A was born on the 25th birthday of his father

12. For real numbers a_1, a_2 is $\left[a_1+\frac{1}{a_1}\right]\left[a_2+\frac{1}{a_2}\right]\geq 4$?

I) $a_1a_2 > 0$ II) $a_1 + a_2 = 1$ ( )

13. What is the set A? ( )

I) A – B = {1, 2, 3} II) B = {4, 5}

14. Is an integer a divisible by 36 ? ( )

I) a is a multiple of 18

II) a is a multiple of 12

15. Let f(x) be a polynomial. Is "r" a root of f(x)?

I) r is root of f(x) ( )

II) $(x - r)^2$ is a factor of f(x)

16. A bag contains balls of which some are white, some are green, some are red and some are blue. What is the fraction of green balls ?

I) 1/2 of the balls are red

II) 1/4 of the balls are white and 1/5 of the balls are blue

17. $n-1_{C_3}+n-1_{C_4}+n_{C_3}$ ( )

I) n is a positive real number

II) n is an integer greater than 7

18. Is $\frac{n^3+3n^2+2n}{3}$ an integer ? ( )

I) n is an integer

II) n is a positive rational number

19. For real number a, b is a > b ? ( )

I) $a^2 > b^2$ II) b > 0

20. What is the area of the circular field ? ( )

I) The total cost of fencing around the field is Rs.10,000

II) The cost of fencing per meter is Rs.100

PROBLEM SOLVING

In a code, each letter in English alphabet is shifted forward to five place cyclically, that is $A \Rightarrow F$, $B \Rightarrow G$,....., $U \Rightarrow Z$, $V \Rightarrow A$, $W \Rightarrow B$,....., $Z \Rightarrow E$. The reverse of this process is used for decoding. Based on this coding and decoding processes answer questions 21 to 30.

21. The code for MATHS is ( )
1) R F Y M Z 2) R F Y M X
3) R F Y M S 4) R F X M Y

22. The code for BUSSINESS is ( )
1) G Z X X N T J X X 2) G Z X X N S K X X
3) G Z X X N S J X X 4) G Z Y Y N T J Y Y

23. What is the code word for ICET ? ( )
1) N H K Z 2) N H K Y
3) N H J X 4) N H J Y

24. What is the code word for EXAM ? ( )
1) JCFS 2) JCFR
3) JCFT 4) JCFQ

25. What is the code of PRIMARY ? ( )
1) U W N R F W D 2) U W N R F X D
3) U W M R F W D 4) U W N S F W D

26. Which word is coded as INDIA ? ( )
1) D J Y D V 2) D J Y D U
3) D I Y D V 4) D J Y D W

27. Which word is coded as KARGIL ? ( )
1) F V M B E G 2) F V M B D J
3) F V M B D H 4) F V M B D G

28. Which word is coded as NEXT ? ( )
1) I Z S P 2) I Z S O
3) I Z S N 4) I Z T O

29. Which word is coded as BANGALORE ? ( )
1) W V I B V G J M Z 2) X J I Q Z I Z N
3) X J I Q Y I Y M 4) X J I Q Z I Z M

30. Which word is coded as CONVENER ? ( )
1) X J I Q Y I Z N 2) X J I Q Z I Z N
3) X J I Q Y I Y M 4) X J I Q Z I Z M

31. What is the least positive integer n such that $8^2 + n^2 + 6^2$ is a perfect cube ? ( )
1) 2 2) 4 3) 5 4) 6

32. The mirror reflection of clock shows 02:30 hrs. What is the actual time ? ( )
1) 09:40 hrs. 2) 08:30 hrs.
3) 10:30 hrs. 4) 09:30 hrs.

33. If the last day of March is Wednesday, the day on which the month starts is : ( )
1) Monday 2) Tuesday
3) Thursday 4) Friday

34. A, B, C, D, E, F are seated in a circle facing the centre. D is between F and B, A is second to the left of D and second to the right of E. Who is facing A? ( )
1) D 2) F or B
3) C or D 4) E

35. A is 40 meters South-West of B and C is 40 meters South – East of B. Then C is in which direction of A ? ( )
1) East 2) West
3) South 4) North

36. A and B are children of C.B is the mother of D and E is maternal grandmother of D. What is the relation of E to C ? ( )
1) Husband 2) Sister
3) Wife 4) Brother

37. The present ages of a father and son are in the ratio 5:2. If after ten years the ratio becomes 2:1, the present age of the son, in years, is ..... ( )
1) 25 2) 20
3) 15 4) 10

38. A can run a kilometer in 3 min. 10 sec and B in 3 min. 20 sec. By what distance can A beat B ? ( )
1) 50 mts. 2) 40 mts.
3) 30 mts. 4) 10 mts.

39. $a * b = a^3 + b^3 - 3ab$ $((-1)*1)$ 1 = ? ( )
1) 12 2) 19
3) 13 4) 1

40. $\{x \in R / x^2 - 3|x| + 2 = 0\}$ = ? ( )
1) (1, 2) 2) (–2, –1)
3) (1, 2, –2) 4) (–2, –1, 1, 2)

Note : In questions numbered 41 to 55 a sequence of numbers or letters that follow a definite pattern are given. Each question has a blank space. This has to be filled by the correct answer from the four given options to complete the sequence without breaking the pattern.

41. 2, 9, 28,....., 126 ( )
1. 47 2) 55 3) 63 4) 65

42. 3, 17, 55, 129,....., 433 ( )
1) 249 2) 250 3) 252 4) 251

43. 2, 6, 12, 20,....., 42 ( )
1) 26 2) 28 3) 30 4) 32

44. 0.5, 0.55, 0.65, 0.8, ... ( )
1) 0.9 2) 0.82 3) 1 4) 0.95

45. $\frac{7}{11}, \frac{13}{17}, \frac{19}{23}$, ..., $\frac{37}{41}, \frac{43}{47}$ ( )
1) $\frac{29}{31}$ 2) $\frac{31}{29}$ 3) $\frac{21}{29}$ 4) $\frac{49}{21}$

46. 6, 26, 126, 626, ..., 15626 ( )
1) 4126 2) 2126 3) 3126 4) 7126

47. $\sqrt{26}, \sqrt{38}, \sqrt{58}$,.....,$\sqrt{86}$ ( )
1) $\sqrt{74}$ 2) $\sqrt{62}$ 3) $\sqrt{82}$ 4) $\sqrt{98}$

48. (4, 15), (6, 35), (8, 63), ..., (12, 143) ( )
1) (10, 93) 2) (10, 99) 3) (10, 98) 4) (10, 96)

49. ACF, ..., GIL, JLO, MOR ( )
1) BDG 2) CEH 3) DFI 4) EGJ

50. ABYZ, CDWX, ..., GHST ( )
1) EFVU 2) EFUV 3) FEUV 4) FEVU

51. 2A4, 3E5, 4I6, ..., 6U8 ( )
1) 5M7 2) 5N7 3) 5O7 4) 5P7

52. STOP, STPO, SOTP, SOPT, SPTO,..... ( )
1) SPOT 2) STPO 3) SOPT 4) SOTP

53. BE : HK : : ..... : TW ( )
1) MP 2) NP 3) NQ 4) MQ

54. 10 : 37 : : ..... : 101 ( )
1) 25 2) 26 3) 57 4) 75

55. 100 : 10000 : : ..... : 625 ( )
1) 0.625 2) 62.5 3) 6.25 4) 625

Note : Q (56-65) : Pick the Odd thing out.

56. 1. 23 – 29 2. 3 – 5 3. 13 – 17 4. 7 – 19

57. 1. 35 2. 45 3. 55 4. 65

58. 1. 348 2. 384 3. 843 4. 834

59. 1. 77 2. 63 3. 36 4. 43

60. 1. 5 2. 10 3. 29 4. 66

61. 1. $\frac{2}{5}$ 2. $\frac{2}{7}$ 3. $\frac{5}{11}$ 4. $\frac{7}{15}$

62. 1. KLM 2. ABC 3. XYZ 4. PQR

63. 1. ERP 2. REP 3. PRS 4. PER

64. 1. AN 2. GS 3. DQ 4. JW

65. 1. P4A 2. D9I 3. D25Y 4. Y9I

Note : For question Nos. (66 to 70) L is the straight line that fits the data given in the table below. Answer question Nos. 66 to 70 using the data.

x	–2	0	2	–1	1
y	0	2	4	1	3

66. Area of the triangle formed by (–2, 0), (0, 2), (2, 4) is ( )
1) 3 2) 2 3) 1 4) 0

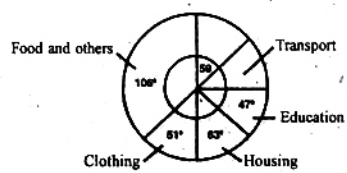
67. Slope of the line L is ..... ( )
1) 1 2) 1/2 3) 2 4) 3

68. Which of the following points lies on the line L ? ( )
1) (3, 4) 2) (2, 3) 3) (3, 5) 4) (2, 1)

69. Y - intercept of the line L is ..... ( )
1) 4 2) 3 3) 1 4) 2

70. The equation of the line L is ..... ( )
1) x + y = 2 2) y = x + 2
3) 2y = x + 2 4) x = y + 2

The given pie diagram show monthly expenditure of a family on various items monthly income of the family is given to be Rs. 36,000. Basing on these, answer question Nos. 71 to 75.



71. The amount spent monthly on food and others is : ( )
1) Rs. 5,300 2) Rs. 10,680
3) Rs. 10,800 4) Rs. 10,600

72. The ratio of amounts spent monthly on housing to clothing is ( )
1) 21 : 18 2) 27 : 23 3) 21 : 17 4) 22 : 17

73. The amount spent monthly on transport is ( )
1) Rs. 3,200 2) Rs. 3,400
3) Rs. 4,300 4) Rs. 5,200

74. The amount of spent of education in one full year is ( )
1) Rs. 56,400 2) Rs. 54,600
3) Rs. 48,000 4) Rs. 56,800

75. The amount spent monthly on clothing and housing is ( )
1) Rs.11,500 2) Rs.14,100
3) Rs.11,400 4) Rs.12,400

SECTION - B
MATHEMATICAL ABILITY

Questions : 75] [Marks : 75

76. $\sin^6\theta + \cos^6\theta + 3\sin^2\theta\cos^2\theta - 1 = ...$ ( )
1) 1 2) –1 3) 0 4) 2

77. If $90^0 < \theta < 180^0$ and $\tan\theta = \frac{12}{5}$ then $\cos\theta =$
1) $-\frac{5}{13}$ 2) $-\frac{5}{12}$ 3) $\frac{5}{13}$ 4) $\frac{5}{12}$

78. If $A + B = 45^0$ then $(1 + \tan A)(1 + \tan B) =$
1) –2 2) 1 3) 0 4) 2

79. From the point, midway between two towers, the angles of elevation of their tops are found to be 60^0 and 45^0. The ratio of the heights of the towers is ? ( )
1) 1 : 2 2) $1:\sqrt{2}$ 3) $1:\sqrt{3}$ 4) $\sqrt{2}:\sqrt{3}$

80. The number of three digit natural number which leave remainder 46 when divided by 50, is ? ( )
1) 20 2) 19 3) 17 4) 18

81. If a, b, c are real and $2+\sqrt{3}$ is a root of the equation $ax^2 + bx + c = 0$, then the other root of the equation is ( )
1) $2-\sqrt{3}$ 2) $4+\sqrt{3}$ 3) $4-\sqrt{3}$ 4) $2+\sqrt{3}$

82. If $3 + 3^{2x} = 4 \times 3^x$ then x = ( )
1) 0, –1 2) 1 only 3) 0 only 4) 0 or 1

83. If gcd (a, b) = 1 then gcd (a+b, a–b) = ( )
1) only 1 2) 1 or 2 3) only 2 4) 3

84. The term independent of x in the expansion of $\left[x^2 - \frac{1}{x}\right]^{12}$ is ( )
1) $12C_6$ 2) $12C_3$ 3) $12C_4$ 4) $12C_5$

85. 10% of 10% of 10% of 1000 is ..... ( )
1) 1 2) 10 3) 0.1 4) 100

86. If the area of square field is 7200 sq.m., then the length of its diagonal (in meters) is ....( )
1) 110 2) 120 3) 130 4) 140

87. The arithmetic mean of the first N natural numbers is ..... ( )
1) $\frac{N}{2}$ 2) N 3) $\frac{N+1}{2}$ 4) N + 1

88. The arithmetic mean of 20 observations is 12.5. By an error, one observation is registered as 15 instead of 15. The corrected arithmetic mean is ... ( )
1) 10.5 2) 14 3) 15.5 4) 19

89. The median of the scores 47, 53, 56, 58, 65, 70, 72, 78 is .... ( )
1) 61.5 2) 61 3) 65 4) 58

90. The mode of the scores 2, 3, 3, 5, 6, 8, 8, 9, 10 is
1) 7 2) 8 3) 6.2 4) 3 ( )

91. The range of the observations 20, 18, 37, 42, 3, 12, 15, 26, is ... ( )
1) 63 2) 42 3) 39 4) 6

92. The mean deviation of the scores 3, 5, 9, 11 and 13 from their arithmetic mean is ( )
1) 0 2) 3 3) 5 4) 8

93. If the standard deviation of $x_1, x_2, ..., x_n$ is σ, then the standard deviation of $-x_1, -x_2, ..., -x_n$ is ( )
1) σ 2) $-\sigma$ 3) 1 4) 0

94. Four persons are chosen at random from a family of 3 men, 2 women and 4 children. The probability that exactly two of them will be children is
1) $\frac{10}{21}$ 2) $\frac{9}{22}$ 3) $\frac{4}{9}$ 4) $\frac{4}{21}$ ( )

95. The probability that A solves a problem is $\frac{1}{3}$ and that of B is $\frac{1}{4}$. Then the probability that the problem is not solved by them is ( )
1) $\frac{2}{3}$ 2) $\frac{3}{4}$ 3) $\frac{1}{2}$ 4) $\frac{5}{12}$

96. If two six faced unbaised dice are thrown simultaneously, then the probability of getting the sum 9 on their upper faces is ( )
1) $\frac{5}{36}$ 2) $\frac{1}{9}$ 3) $\frac{1}{4}$ 4) $\frac{1}{12}$

97. If x = 0.1 then $\left\{1-\left\{1-(1-x^3)^{-1}\right\}\right\}^{-1}$. ( )
1) 1.0 2) 0.9 3) 0.99 4) 0.1

98. Three numbers in the ratio 2 : 3 : 4 have their sum 270. Their L.C.M. is ..... ( )
1) 120 2) 360 3) 240 4) 270

99. The average age of three girls is 20 years and their ages are in the ratio 3 : 5 : 7. The age (in years) of the youngest girl is ( )
1) 6 2) 12 3) 4 4) 8

100. If $a = \sqrt{729} =$ then

$\sqrt{7.29} \times \sqrt{0.0729} \times \sqrt{0.000729} =$ ( )

1) $\frac{a^3}{10}$ 2) $\frac{a^3}{10^3}$ 3) $\frac{a^3}{10^6}$ 4) a^3

101. If $x = \sqrt{37} - \sqrt{7}$ and $y = \sqrt{43} - \sqrt{13}$ then( )

1) $x < y$ 2) $x > y$ 3) $x = y$ 4) $x = 2y$

102. If a and b are positive integers such that $a^2 - b^2$ is a prime number, then $a^2 - b^2 =$ ( )

1) $a + b$ 2) $a - b$ 3) ab 4) 3

103. The L.C.M. of two numbers are 14 times their gcd. The sum of L.C.M. and gcd is 600. If one number is 280, then the other is ( )

1) 100 2) 90 3) 80 4) 50

104. The gcd and L.C.M. of two numbers are 12 and 252 respectively. If one number is 36, then the other is ( )

1) 44 2) 32 3) 26 4) 84

105. Three positive integers are in the ratio 3:5:7. If their gcd is 20, then their sum is ..... ( )

1) 200 2) 300 3) 500 4) 700

106. $0.4\overline{2}\,\overline{3} =$ ( )

1) $\frac{423}{1000}$ 2) $\frac{419}{990}$ 3) $\frac{419}{999}$ 4) $\frac{422}{999}$

107. The largest integer lessthan $(\sqrt{3}+1)^4$ is ( )

1) 57 2) 56 3) 55 4) 54

108. The greatest of the fractions $\frac{6}{7}, \frac{4}{5}, \frac{7}{8}, \frac{5}{6}$ is....

1) $\frac{7}{8}$ 2) $\frac{4}{5}$ 3) $\frac{5}{6}$ 4) $\frac{6}{7}$ ( )

109. If 25% of x is equal to 50% of y, then ( )

1) $x = y$ 2) $x = 2y$ 3) $2x = y$ 4) $2x = 3y$

110. The cost price of 16 pens is the same as the selling price of 12 pens. The percentage of profit is ( )

1) 25% 2) 30% 3) $33\frac{1}{3}\%$ 4) $16\frac{2}{3}\%$

111. In a bag containing 800 coins 10% are Rs. 5 coins, 3% are Rs. 2 coins and the rest are 50 ps coins. The total value of the money (in Rupees) in the bag is ( )

1) 900/- 2) 960/- 3) 1020/- 4) 1120/-

112. The catalogue price of an article is 20% above its cost price. The percentage of discount that can be given to get a profit of 14% is ( )

1) 7 2) 6 3) 5 4) 4

113. If each edge for a cube is increased by 50%, then the increase in the percentage of its surface area is ( )

1) 100% 2) 125% 3) 140% 4) 225%

114. Rs.150 has to be shared by A, B and C in such a way that A gets Rs. 30 more than B and B gets twice as much as C gets, then the share of C (in Rupees) is ..... ( )

1) 20 2) 30 3) 25 4) 24

115. 'A' started a business with an investment of Rs.76,000. After n months B joins A with a capital of Rs. 57,000. If the ratio of profit at the end of the year is 2 : 1, then n = ( )

1) 2 2) 3 3) 4 4) 5

116. A motor cycle costs Rs. 35,000. At the end of each year, its worth is 4/5 of it worth at the beginning of the year. The worth of the motor cycle at the end of 2 years (in Rupees) is .....

1) 22400 2) 28000 3) 20000 4) 30000( )

117. A train travelling with a speed of 36 km per hour crosses a platform of 220 meters long in 40 seconds. The length of the train (in meters) is .....

1) 160 2) 180 3) 200 4) 220 ( )

118. A, B and C are three workers. The work done by C in 3 days can be finished by A in 2 days. The work done by B in 5 days can be completed by C in 4 days. If A can complete a work in 16 weeks, the number of weeks required by B to complete the same is .... ( )

1) 25 2) 35 3) 30 4) 40

119. A train moving at 40 kmph takes 45 minutes to travel from X to Y. If the speed is reduced by 4 kmph in its return journey from Y to X, the extra time (in minutes) taken in the return is ( )

1) 5 2) 6 3) 4 4) 7

120. If the perimeter of ΔABC is 32 cms and D, E, F are the mid points of the sides of ΔABC then the perimeter of ΔDEF (in cms) is ..... ( )

1) 64 2) 16 3) 8 4) 4

121. The circumference of a circular park, the area covered by which is 441π sq.meters, (in meters) is

1) 21π 2) $21\pi^2$ 3) $42\sqrt{\pi}$ 4) 42π ( )

122. The volumes of two cylinders with same base curve are in the ratio 3 : 2. If the height of the smaller cylinder is 8cm, then the height of the other (in cms) is ( )

1) 8 2) 10 3) 11 4) 12

123. The inner and outer radii of a circular track are 21 meters and 28 meters respectively. The cost of levelling the track at Rs.10 per square metre (in Rupees) is ..... ( )
1) 15400 2) 10780 3) 8780 4) 7700

124. Signal lights at three different road junctions change after every 48 seconds, 60 seconds and 96 seconds. If all the three signal lights simultaneously change at 6 hours 10 minutes, then the next change simultaneously is at ( )
1) 6 hours 14 minutes 2) 6 hours 15 minutes
3) 6 hours 18 minutes 4) 6 hours 20 minutes

125. In a class of 25 students, 12 have taken economics, 8 have taken economics but no politics. Then the number of students who have taken politics but not economics is ( )
1) 4 2) 8 3) 17 4) 13

126. The tautology, among the following, is.... ( )
1) $p \vee (\sim p)$ 2) $p \wedge (\sim p)$
3) $p \Rightarrow q$ 4) $p \vee (\sim q)$

127. $\sim(p \to q) =$ ( )
1) $p \wedge (\sim q)$ 2) $\sim p \wedge q$
3) $p \wedge q$ 4) $\sim p \wedge \sim q$

128. In the set L of all straight lines in a plane define a $Rb \Leftrightarrow a \perp b$. Then R is ..... ( )
1) Reflexive 2) Symmetric
3) Transitive 4) An Equivalence relation

129. If $f : a^{TR} \to^{TR}$ is defined by ( )

$$f(x) = \begin{cases} 1 \text{ for } x \geq 0 \\ -1 \text{ for } x < 0 \end{cases}$$ then f is .....

1) one-one 2) onto
3) neither one-one nor onto
4) not a function

130. If $f(x) = 3x + 5$ and $g(f(x)) = x$. then $g(x) =$( )
1) $\frac{x+5}{2}$ 2) $\frac{x-5}{3}$ 3) $\frac{x+5}{3}$ 4) $\frac{x-5}{2}$

131. If the polynomial f(x) is divided by $(x - 4)$ the remainder is 9 then a factor of $g(x) = f(x^2) - 9$
1) $x - 3$ 2) $x + 3$ 3) $x + 2$ 4) $x + 4$ ( )

132. gcd of x^2+5x+6 and $(x^2 - 9)(x + 2)$ is ( )
1) $x - 3$ 2) $x + 2$
3) $(x+2)(x+3)$ 4) $(x-3)(x+2)$

133. If $2x - y = 5$ and $3x+2y = -3$ then $3x+y =$( )
1) -2 2) -1 3) 0 4) 1

134. If the system $ax + by = 1$ and $\frac{x}{a}+\frac{y}{b}=1$ has a unique solution, then ( )
1) $a = b$ 2) $a = b = 1$ 3) $a \neq b$ 4) $|a| \neq |b|$

135. The number of real roots of the equation $|x|^2 - 6|x| + 8 = 0$ is ( )
1) 1 2) 2 3) 3 4) 4

136. If the roots of $x^2+ax+1 = 0$ are imaginary, then 'a' lies in the interval ( )
1) $(-2,-1)$ 2) $(-2,-2)$ 3) $(-2, 2)$ 4) $(-2,1)$

137. If α and β are the roots of $6x^2 - 6x + 1 = 0$ then $(a+b\alpha+\alpha^2) + (a+b\beta+c\beta^2) =$ ( )
1) $2a + b + \frac{2}{3}c$ 2) $2a + b + \frac{1}{3}c$
3) $2a + b + \frac{1}{3}b + c$ 4) $2a + \frac{2}{3}b + c$

138. The Quadratic equation with rational coefficients for which $1 + i$ is a root is ( )
1) $x^2 + x + 1 = 0$ 2) $x^2 - x + 1 = 0$
3) $x^2 + 2x + 2 = 0$ 4) $x^2 - 2x + 2 = 0$

139. The sum of the first p terms of an arithmetic progression whose n^{th} term is $3n - 1$, is ....( )
1) $\frac{1}{2}(3p+1)$ 2) $\frac{1}{2}(3p-1)$
3) $\frac{1}{2}p(3p+1)$ 4) $\frac{1}{2}p(3p-1)$

140. $\sum_{k=1}^{n} k = 351$, then $n =$ ( )
1) 23 2) 24 3) 25 4) 26

141. The first term and common ratio of a geometric progression are respectively 5 and 3. If the sum of first n term of this is 605 then n =
1) 3 2) 4 3) 5 4) 6 ( )

142. In a geometric progression the first term is -3 and the fourth term is the square of its second term. The seventh term of the progression is
1) 2187 2) -2187 3) 2000 4) 2023 ( )

143. If $A = \begin{bmatrix} -1 & -5 \\ -2 & 3 \end{bmatrix}$ and $A^{-1} = -\frac{1}{13}B$, then B =
1) $\begin{bmatrix} 4 & 5 \\ 2 & -1 \end{bmatrix}$ 2) $\begin{bmatrix} 3 & 6 \\ 2 & -1 \end{bmatrix}$ ( )
3) $\begin{bmatrix} 3 & 5 \\ 3 & -1 \end{bmatrix}$ 4) $\begin{bmatrix} 3 & 5 \\ 2 & -1 \end{bmatrix}$

144. If $A = \begin{bmatrix} 1 & 3 \\ 0 & 1 \end{bmatrix}$ then $A^4 =$ ( )

1) $\begin{bmatrix} 1 & 9 \\ 0 & 1 \end{bmatrix}$ 2) $\begin{bmatrix} 1 & 16 \\ 0 & 1 \end{bmatrix}$ 3) $\begin{bmatrix} 1 & 12 \\ 0 & 1 \end{bmatrix}$ 4) $\begin{bmatrix} 1 & 81 \\ 0 & 1 \end{bmatrix}$

145. $\lim_{x \to 2} \left[\frac{1}{x-2} - \frac{1}{x^2-3x+2} \right] =$ ( )

1) 4 2) 3 3) 2 4) 1

146. If $x^2y = 1$, then $\frac{dy}{dx} =$ ( )

1) $\frac{1}{x^2}$ 2) $\frac{2}{x^3}$ 3) $\frac{-2}{x^3}$ 4) $\frac{-2}{x^2}$

147. In ΔABC if $\angle A = \frac{\pi}{2}$, then the orthocenter of the triangle lies at the point ( )

1) A 2) B 3) C
4) P, the midpoint of AC

148. The distance between the lines $3x + 4y + 1 = 0$ and $6x + 8y - 1 = 0$ is ( )

1) 0.1 2) 0.2 3) 0.3 4) 0.4

149. If $a \neq b$ the point of intersection of the lines $\frac{x}{a} + \frac{y}{b} = 1$ and $\frac{x}{b} + \frac{y}{a} = 1$ lies on ( )

1) $ax + by = 0$ 2) $ay + bx = 0$
3) $x + y = 0$ 4) $x - y = 0$

150. The equation of the line perpendicular to $5x - 2y + 4 = 0$ and passing through $(1, -1)$ is( )

1) $5x + 2y + 3 = 0$ 2) $2x + 5y + 3 = 0$
3) $2x - 5y + 3 = 0$ 4) $5x - 2y + 3 = 0$

SECTION- C
COMMUNICATION ABILITY

Questions : 50] **[Marks : 50**

Read the following passage and answer questions 151 to 155 :

There is a story about an ancient Indian sage who was called ugly names by a passerby.

The sage listened unperturbed till the man ran out of words. He asked the man." If an offering is not acceted, whom does it belong to? "The man replied, "It belongs to the person who offered it. "The sage said, "I refuse to accept your offering "and walked away leaving the man dazed. The sage was internally driven.

So long as we blame outside sources, our miseries will continue and we will feel helpless. Unless we accept responsibility for our feelings and behaviour, we cannot change. The first step is to ask.

★ Why did I get upset ?
★ Why am I angry ?
★ Why am I depressed ?

Then we start getting the clues to overcome them. Happiness is a result of positive self-esteem. If you ask people what makes them happy. You will get all kinds of answer. Most of them would include material things but that is not really true. Happiness comes from being and not having. One can have everying in life and yet not be happy. The reverse is also ture.

Happiness in internal. Happiness is like a butterfly. You run after it, it keeps flying away.If you stand still, it comes and sits on your shoulder.

151. **The Indian sage left the passer by shocked by** ( )
1) Indulging in counter accusation
2) Teaching him a moral by the use of his logic
3) Leaving him perturbed by forceful argument
4) Driving him to turn his gaze inward

152. **In order to change ourselves** ( )
1) We must ask disturbing question
2) We should stop feeling miserable
3) We should stop being helpless
4) We should accept responsibility for our behaviour and feelings

153. **Positive self-esteem is** ( )
1) A result of happiness
2) One of the causes of happiness
3) A result of change 4) A cause of change

154. **The author suggests that** ( )
1) One must have everything in life to be happy
2) By having everything in life one is unhappy
3) One may not have anything in life and yet be happy
4) One must have nothing to be happy

155. **Happiness is compared with a butterfly because.** ( )
1) One feels happy to have a butterfly
2) A butterfly flutters happily
3) One does not chase butterfly to have it
4) The butterfly comes to you if you do not go after it

Read the passage answer (Q. 156-160)

With the recent growth of mass media technology, advertising has begun to play a significant, role in the national economy. Thousands of people are working to promote the sale of each new product or to boost the sale of product already in the market. Infact, advertising as an industry now enjoys a respectable status and is regarded by many as a service to society.

The avowed purpose of advertising is to inform the audience and to influence. It to buy a particular product. The customer is made aware of goods and services available, their merits, uses and value. Advertising thus helps him in choosing what he actually needs of what he should have to add to his comfort and improve his standard of living. But the sale of product does not depend on advertisment alone. The quality of product must be good and its price within reach of those for whom it is intended. If exaggerated elainms are made or the price too high, advertising, howsoever powerful, will not prove effective.

156. The main function of advertising is to ( )

1) Help in buying a product
2) Improve the standard of living
3) Promote employment
4) Make the profession more respectable

157. Advertising has begun to play an important role as result of the ( )

1) Modernisation of society
2) Increase in new products
3) Development of mass media
4) Expanding population

158. The word 'boost' means ( )

1) Increase 2) Help
3) Manage 4) Decrease

159. Advertising proves effective when the ( )

1) Advertisements are well designed
2) Quality of the product is good and the price is reasonable
3) Price is low
4) Quality of the product is good and the price is reasonable

160. Which of the statement is <u>not true</u> of the passage

1) Thousands of people work in advertising industry
2) Advertisements do not help people to choose the right product ( )
3) Increasing number of industries leads to more advertisements
4) Media is a boon to the advertising industry

Read the following passage and answer questions from 161 to 165 :

Male lions are rather reticent about expending their energy in hunting more than three quarters of kills are made by lionesses. Setting off at dusk on a hunt, the lionesses are infront, tensely scanning ahead, the cubs lag playfully behind, and the males bring up the rear, walking slowly, their massive heads nodding with each step as if they were bored with the whole matter. But slothfulness may have survival value. With lionesses busy hunting, the males function as guardes for the cubs, protecting them particularly from hyenas. Lions practice remarkably sophisticated cooperative hunting techniques. Sighting prey, lionesses usually fan out and stalk closer until one is within striking distance. The startled herd may scatter or bolt to one side right into a hidden lioness. Sometimes lionesses surround their quarry, while perhaps three crouch and wait a fourth may backtrack and then circle far around and approach from the opposite side, a technique not unknown in human warfare.

161. Where in does the survival value of the male lions lie ? ( )

1) They survive because they walk slowly nodding their heavy heads
2) They are not in the forefront of the hunting activity and hence they survive
3) They are behind their cubs and protect them
4) They are not enthusiastic about hunting and hence they survive

162. Male lions are described as slothful and reticent because ( )

1) They are in the forefront of the hunting activity and move lethargically
2) They are not the forefront but are very alert and watchful about their prey
3) They are in the rear, walk, slowly, move about as if bored
4) They are not watchful in protecting their cubs

163. Where do the cubs position themselves in the hunting activity? ( )

1) Behind the lions who guard them
2) Behind the lionesses moving about playfully
3) Between the lions and the hyenas
4) Between the tensely scanning lionesses and their possible prey

164. The hunting technique of the lions ( )

1) Resembles the modes of human welfare
2) Does not bear any resemblance to the techniques of human welfare
3) Follows a co-operative mode not known to humans
4) Follows as sophisticated technique without parallels

165. The word 'practise' in the passage is a / an

1) Noun 2) Adverb ( )
3) Gerund 4) Verb

Choose the Correct meaning for the word :

166. **Rudimentary** ( )
1) Rude nature 2) Elementary
3) Ruthless 4) Strong

167. **Assimilate** ( )
1) Absorb 2) Recall
3) Imitate 4) Try

168. **Corporeal** ( )
1) Spiritual 2) A petty officer
3) Capital 4) Material

169. **Aisle** ( )
1) Island 2) Footpath
3) Passage 4) Pavement

170. **Upbraid** ( )
1) Hairo 2) Scold
3) Embroidery 4) Unwind

171. **Lessee** ( )
1) Buttermilk 2) Yoghurt
3) Ligh hearted 4) Lease - hilder

Fill in the blanks choosing the correct word :

172. **Over indulgence ..... character as well as physical stamina** ( )
1) debilitates 2) stimulates
3) enhances 4) maintains

173. **A seismograph detects .....** ( )
1) climatic changes 2) glandular deficiency
3) earthquakes 4) heart ailments

174. **The police have decided to ..... the theatre following a bomb scare.** ( )
1) eradicate 2) evacuate
3) eject 4) expel

175. **Human Resource Management is an ..... of mind rather than a set of techniques** ( )
1) attitude 2) enterprise
3) evolution 4) authority

Choose the correct Answer :

176. **VAT stands for** ( )
1) Video Audio Terminal
2) Value Added Tax
3) Very Attractive Tarif
4) Viutual Aptive Terminal

177. **SOHO stands for** ( )
1) Sub Office Head Office
2) Soft Option Hard Option
3) Small Office Home Office
4) Saff Officer Higher Officer

178. **Customs duty is levied when** ( )
1) Goods are exported
2) Goods are sold in internal market
3) Goods are manufactured
4) Goods are imported

179. **USP is** ( )
1) Unique Selling Proposal
2) Unique Sales Proposition
3) Unique Selling Proposition
4) Unique Sales Perspective

180. **Bank rate is the** ( )
1) Rate of interest at which the RBI finance commercial banks
2) Rate of interest at which commercial banks finance their customers
3) Rate of interest charged for bank deposits
4) Interest rate fixed by the Finance Ministry for the issue of loans to states

181. **"Linux" is** ( )
1) An operating system
2) An application software
3) A compiler
4) A net work hardware

182. **"A Search engine" is a** ( )
1) Website in interest
2) Cyber space portal
3) Software for internet applications
4) Software for computing

183. **ISDN is an abbreviation for** ( )
1) Integrated System Digital Network
2) Integrated Services Digital Network
3) Integrated Systems Deployment Network
4) Inter-Services Digital Network

184. **MIS stands for** ( )
1) Management Information Scheme
2) Message Information System
3) Message Information Scheme
4) Management Information System

185. **TRIP is an abbreviation for** ( )
1) Trade Related Intellectual Property
2) Trade Regulated Intrinsic Property
3) Trade Regulated Intellectual Property
4) Trade Related Intellectual Property

Choose the correct Answer :

186. **"You have put a sopke in my wheel" means**
1) "You have encourage me" ( )
2) "You have been rude to me"
3) "You do not want me to drive"
4) "You have ereated obstacles for me"

187. **"Shall we advance the meeting by a day ?**
1) An order 2) A statement ( )
3) A suggestion 4) A declaration

188. **"Arun called on Yusuff yesterday" means**
1) Arun phoned Yusuff ( )
2) Arun visited Yusuff
3) Arun invited Yusuff
4) Arun shouted at Yusuff

189. **John : When are you taking up your new assignment ?** ( )
Mary : I am keeping may fingers crossed. Mary's statement means that
1) She has decide not to take up the assignment.
2) She is folding her hands.
3) She has decided to take up the assignment.
4) She has not yet taken a decision.

190. **"The organisation is strapped for cash at the moment"means** ( )
1) The organisation has little money at the moment.
2) The organisation has a lot of money.
3) The organisation is on a spending spree.
4) Cash in flowing into the organisation.

191. **"Hundreds of theft cases are noticed every week and that is just the tip of the iceberg" This sentence means** ( )
1) Many more thefts are known and reported.
2) Many more thefts are brought to light.
3) Many more occure but are not reported.
4) It is so freezing to notice that hundreds of thefts take place every week.

192. **"Time serving politicians ruin democracy" means** ( )
1) Politicians are not punctual and therefore they ruin democracy.
2) Politicians change their views to suit powers that be and therefore they ruin democracy.
3) Politicians are time conscious and hence declay their decisions, thus ruining democracy.
4) Politicians are too busy to serve the nation and so ruin the nation.

Fill in the blanks with appropriate phraselverb/ preposition :

193. **It was a situation.....which no escape was possible** ( )
1) in 2) from 3) of 4) on

194. **A leader can easily see .....the ruse of his opponent** ( )
1) through 2) into 3) in 4) to

195. **I ..... the car; there was a tree across the road**
1) must stop 2) will stop ( )
3) have to stop 4) had to stop

196. **My patience ..... at last** ( )
1) wear out 2) worn out
3) is worn 4) wore out

197. **The captain with his soldiers.....** ( )
1) are coming 2) have been coming
3) is coming 4) have come

198. **It was.....to watch Tendulkar's splendid batting**
1) a delight ful 2) a delight ( )
3) defighfully 4) delight

199. **The manager succeede in .....the crisis** ( )
1) diffusing 2) detonating
3) defusing 4) deranging

200. **His arguments cut no..... with me** ( )
1) iee 2) bread 3) snow 4) cake

KEY

1) 3	2) 4	3) 3	4) 2	5) 4	6) 3	7) 1	8) 3	9) 2	10) 4
11) 3	12) 3	13) 3	14) 3	15) 4	16) 3	17) 2	18) 3	19) 3	20) 3
21) 2	22) 3	23) 4	24) 2	25) 1	26) 3	27) 4	28) 2	29) 1	30) 4
31) 3	32) 4	33) 1	34) 2	35) 1	36) 3	37) 2	38) 4	39) 2	40) 4
41) 4	42) 4	43) 3	44) 3	45) 1	46) 3	47) 1	48) 2	49) 3	50) 2
51) 1	52) 1	53) 3	54) 2	55) 3	56) 4	57) 2	58) 3	59) 4	60) 1
61) 4	62) 3	63) 3	64) 2	65) 1	66) 4	67) 1	68) 4	69) 4	70) 2
71) 4	72) 3	73) 2	74) 1	75) 3	76) 3	77) 1	78) 4	79) 3	80) 4
81) 1	82) 4	83) 1	84) 3	85) 1	86) 2	87) 3	88) 2	89) 1	90) 2
91) 3	92) 2	93) 1	94) 3	95) 4	96) 2	97) 4	98) 2	99) 2	100) 3
101) 2	102) 3	103) 3	104) 4	105) 2	106) 2	107) 3	108) 1	109) 2	110) 3
111) 4	112) 3	113) 2	114) 4	115) 3	116) 1	117) 2	118) 4	119) 1	120) 2
121) 4	122) 4	123) 2	124) 3	125) 4	126) 1	127) 1	128) 1	129) 3	130) 2
131) 4	132) 4	133) 3	134) 2	135) 2	136) 3	137) 4	138) 3	139) 4	140) 4
141) 3	142) 2	143) 4	144) 3	145) 4	146) 3	147) 4	148) 3	149) 2	150) 3
151) 1	152) 4	153) 1	154) 4	155) 3	156) 1	157) 3	158) 1	159) 4	160) 2
161) 3	162) 2	163) 1	164) 3	165) 4	166) 2	167) 1	168) 4	169) 3	170) 2
171) 4	172) 1	173) 3	174) 2	175) 1	176) 2	177) 3	178) 4	179) 3	180) 1
181) 1	182) 3	183) 2	184) 4	185) 1	186) 4	187) 3	188) 2	189) 4	190) 1
191) 3	192) 2	193) 2	194) 3	195) 4	196) 4	197) 3	198) 2	199) 1	200) 4