ICET - 2006 PAPER
(BASED ON STUDENTS MEMORY)

Time : 2 Hours] Max. Marks : 200]

SECTION - A
ANALYTICAL ABILITY

Questions : 75] [Marks : 75

I) 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 questions. Using the data make appropriate choice from (1) to (4) as per the following guidelines :

a) Mark choice (1) If the statement I alone is sufficient to answer the question;

b) Mark choice (2) If the statement II alone is sufficient to answer the question ;

c) Mark choice (3) If both statements I and II are sufficient to answer the question but neither statement alone is not sufficient;

d) Mark choice (4) If both statements I and II are not sufficient to answer the question and additional data is required.

1. What is the speed of the train ? ( )

I) The train goes $2\frac{1}{2}$ times fast as a goods train

II) The train leaves Hyderabad 3 hours after the goods leaves and overtakes.

2. What is the area of the rhombus ? ( )

I) Each of its sides is 120 cm

II) Two of its opposite angles are 60^0

3. Is a > b ? ( )

I) $a^2 > b^2$ II) $\frac{a}{b} = \frac{3}{5}$

4. What are the values of a and b in the polynomial $f(x) = 3x^5 - 11x^4 + 2x^3 - 5x^2 + ax + b$?

I) $x^2 - 3x + 2$ divides $f(x)$ ( )

II) $f(x)$ is a Multiple of $x + 5$

5. What was the age of the father, when his eldest son was born ? ( )

I) Father's present age is twice the sum of the ages of all of his three sons born at intervals of two years

II) Father's present age is 42 years

6. What is the number of educated youth in the village ? ( )

I) In the village 1/4th of the youth are educated

II) In the village 1/5th of the youth are employed

7. What is the maximum value of x ? ( )

I) $5x^2 \leq 4x^2 + x$ II) $\frac{1}{4x} + \frac{1}{5x} > 0$

8. Is a < b ? ( )

I) $7a + 7b$ is positive

II) $-7a + 7b$ is negative

9. What is the percentage of change in the area of the rectangle ABCD. ( )

I) In measuring the sides, AB is taken 5% in excess

II) In measuring the sides, AD is taken 5% in deficit

10. If x is an integer, what is x ? ( )

I) $\frac{1}{4} < \frac{1}{x+2} < \frac{1}{2}$ II) $x^2 - 5x + 4 = 0$

11. What are the values of a and b ? ( )

I) $2.5a + 7b = 35$ II) $10a + 28b = 140$

12. Does p divide 15x ? ( )

I) p divides $3x + 4y$

II) p divides both $x + 2y$ and $2x + y$

13. What is the value of $\frac{a^2 - b^2}{a^2 + ab}$? ( )

I) $\frac{a}{b} = 1$ II) $a + b \neq 10$

14. What is the value of $\frac{a}{b} - \frac{b}{a}$? ( )

I) $\frac{b^3}{a^3} - \frac{a^3}{b^3} = -36$ II) $a + b = 10$

15. What are the dimensions of the room ? ( )

I) The sum of all edges of the room is 68 ft.

II) The room is rectangular

16. What is the value of $(x + y + x)^4 - x^4 - y^4 - z^4$?
    I) $z = 8$ II) $x = 6, y = -6$ ( )

17. If a, b, c, d are positive integers, what is the value of a ? ( )
    I)   The average of a, b, c is 15
    II) The average of b, c, d is 20

18. What is the equation of the straight line?( )
    I)   The line makes an intercept of 5 units on y-axis
    II) The line passes through the point (0, 5)

19. How old is each of the father and son ? ( )
    I)   Four years ago the father was six times older than his son
    II) After sixteen years, the father will the twice as old as his son

20. What is the value of a – b ? ( )
    I) $2(a - b) = 2b - 2a$
    II) $a + b = 5$

II) PROBLEM SOLVING

a) Sequence and Series

Note : In questions numbered 21 to 35 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.

21. V21, W3G, X5E, Y7C, ..., A13Y ( )
    1) Z11B   2) Z9B
    3) Z9A   4) Z11A

22. ACZY, CEYX, EGXW, ..., IKVU ( )
    1) GIZY   2) GIWV
    3) GIVU   4) GIWU

23. Z0A, Y3C, ..., W15G, V24I ( )
    1) X9E   2) X8F
    3) X8E   4) X9F

24. DFIK, GILN, JLOQ, ... ( )
    1) MORT   2) MRPO
    3) MORP   4) MPRO

25. ZYK, WVU, ..., QPO, NML, KJI ( )
    1) SRT   2) TSR
    3) TRS   4) RST

26. 3, 5, 7, 11, 13, 17, 19, ..., 29 ( )
    1) 21   2) 25
    3) 23   4) 27

27. 5, 7, 12, 19, 31, ..., 81, 131 ( )
    1) 36   2) 40
    3) 48   4) 50

28. 15, 32, 66, ..., 270 ( )
    1) 136   2) 134
    3) 140   4) 138

29. (0, 1), (1, 2), (2, 5), (3, 10)......, (5, 26) ( )
    1) (4, 17)   2) (4, 15)
    3) (4, 19)   4) (4, 21)

30. 2, 6, 12, 20, 30, ..., 56 ( )
    1) 38   2) 40
    3) 42   4) 44

31. EJO, DHL, CFI, BDF, ... ( )
    1) ABC   2) ACE
    3) ABD   4) ABE

32. HLTX, JMSV, LNRT, NOQR, ... ( )
    1) PPQR   2) RPPP
    3) QPPQ   4) PPPP

33. 0, 6, 24, 60, ..., 210 ( )
    1) 120   2) 126
    3) 164   4) 172

34. 3, 5, 9, 17, 33, ... ( )
    1) 67   2) 65
    3) 57   4) 87

35. $\dfrac{1}{2}, \dfrac{8}{3}, \dfrac{27}{5}, \text{..........}, \dfrac{125}{11}, \dfrac{216}{13}$ ( )
    1) $\dfrac{81}{7}$ 2) $\dfrac{64}{9}$
    3) $\dfrac{81}{9}$ 4) $\dfrac{64}{7}$

Note : In questions 36 to 45 pick the odd thing out.

36. 1) August   2) July
    3) May   4) June

37. 1) Fish   2) Frog
    3) Crocodile   4) Turtle

38. 1) 1001   2) 1011
    3) 1101   4) 111

39. 1) UNR   2) OMS
    3) DLT   4) AKU

40. 1) AXZT   2) XZTA
    3) ZTAX   4) TAZX

41. 1) 67   2) 57
    3) 47   4) 37

42. 1) $\dfrac{15}{14}$ 2) $\dfrac{2}{3}$
    3) $\dfrac{23}{24}$ 4) $\dfrac{31}{35}$

43.	1) Eye	2) Tongue
	3) Ear	4) Nose
44.	1) 216	2) 343
	3) 516	4) 729
45.	1) 11	2) 111
	3) 1111	4) 111111

b) Data Analysis :

Note : The following Pie chart shows how the municipal funds are spent under different heads in a year. Study the chart and answer the questions 46 to 50.

46. **What is the ratio of the expenditure on education to that on health?** ( )
    1) 3 : 2   2) 2 : 3
    3) 3 : 4   4) 4 : 3

47. **Which single head uses 25% of the funds?**
    1) Health   2) Education ( )
    3) Housing   4) Roads

48. **What percentage is spent on housing?** ( )
    1) $19\frac{2}{3}$ 2) $16\frac{1}{3}$
    3) 15   4) $16\frac{2}{3}$

49. **Which head has the maximum expenditure?**
   1) Health   2) Education ( )
    3) Roads   4) Housing

50. **Which heads have the same amount of expenditure?**
    1) Housing and Education ( )
    2) Health and Housing
    3) Roads and Housing
    4) Housing and Others

Note : (for questions 51 to 55)
The following figures has three intersecting circles, each representing a group of students who got first class marks in the subject shown against it. Study the figure carefully and answer questions 51 to 55.
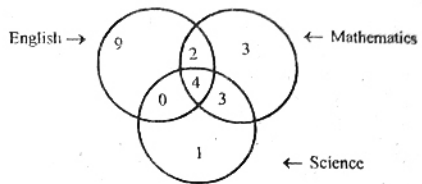
51. **The number of students who got first class marks in more than one subject ?** ( )
    1) 8   2) 12
    3) 9   4) 10

52. **The percentage of students who got first class marks in English among students who got first class in atleast once of the three subjects ?**
    1) $68\frac{2}{11}$ 2) $48\frac{2}{11}$ ( )
    3) $58\frac{2}{11}$ 4) 62

53. **How many students got first class marks only in Mathematics?** ( )
    1) 1   2) 2
    3) 3   4) 4

54. **How many students got first class marks in all the three ?** ( )
    1) 1   2) 2
    3) 3   4) 4

55. **How many students first class marks in Science?**
    1) 6   2) 8 ( )
    3) 7   4) 4

c) Coding and Decoding

Note : In a code, the rth letter is shifted to $(27 - 2r)^{th}$ letter for r = 1, 2, ..., 13, the fourteenth letter is shifted to 26th letter and, for r = 15, 16, ..., 26, the rth letter is shifted to $(2r - 28)$th letter. For decoding the inverse process of the above is followed. Using this coding and decoding, answer the questions 56 to 65.

56. **Which word is coded as ITALY ?** ( )
    1) IXTMA   2) IXMTY
    3) IXMTA   4) IMXTY

57. **Which letter is coded as Y ?** ( )
    1) A   2) N
    3) B   4) M

58. **What is the code letter for P ?** ( )
    1) J   2) D
    3) L   4) W

59. What is the code word for **SENDER** ? (   )
1) JQSZQH 2) JRSZRH
3) JPZSPH 4) JQZSQH

60. What is the code word for **POTA** ? (   )
1) DLBY 2) DBYJ
3) DBLY 4) DLYB

61. Which word is decoded as **LMVIXMT** ? (   )
1) CAPSTAN 2) CAPITAL
3) CAPTAIN 4) CAPTION

62. What is the code for **IUPILM** ? (   )
1) INDIAN 2) INDIRA
3) INDUCE 4) INDICA

63. What is the code word for **MAGNET**? (   )
1) AYMQZL 2) AYZMQL
3) AYMZQL 4) AYQMZL

64. What is the code for **HIXVTA**? (   )
1) KITKAT 2) KITPLY
3) KINLEY 4) KINDLE

65. Which word is decoded as **XIDLF** ? (   )
1) THINK 2) TIGER
3) TISCO 4) THICK

d) Date, Time & Arrangement Problems :

66. If 8th March falls three days after Sunday on what day will the last day of that month fall ?
1) Wednesday 2) Thursday (   )
3) Friday 4) Saturday

67. In a clock, what is the angle between the two hands at 5 hours 10 minutes? (   )
1) 60^0 2) 95^0
3) 90^0 4) 100^0

68. Which of the following is true if $a = \dfrac{3}{4}$, $b = \dfrac{4}{5}$

and $c = \dfrac{5}{6}$? (   )
1) a<c<b 2) a<b<c
3) c<a<b 4) b<a<c

69. Let Z denote the set of integers, (   )
$A = \{a \in Z /\ |a - 1| < 3\}$ and
$B = \{a \in Z /\ |a - 3| < 4\}$
Then the least element in B – A is ?
1) 1 2) 2
3) 3 4) 4

70. The last day of February 2006 was a (   )
1) Monday 2) Tuesday
3) Wednesday 4) Thursday

71. In the array 48392874362754869364, the number of instances where an even number is followed by two odd numbers is (   )
1) 1 2) 2
3) 3 4) 4

72. How many integers from 1 to 100 exist such that each is divisible by 5 and also has 5 as a digit?
1) 10 2) 11 (   )
3) 12 4) 20

73. The time on the watch is 9-15 and the hour-hand points towards west. The direction of the minutes hand is ? (   )
1) North 2) South
3) East 4) West

74. $a*b = a^2 - ab + 2 \Rightarrow 2*(3*4) = ?$ (   )
1) 24 2) 16
3) 9 4) 8

75. Three years ago, the average age of A and B was 20 years. Now, C has joined them and their average age became 25 years. What is the present age of C in years ? (   )
1) 30 2) 31
3) 29 4) 32

SECTION - B
MATHEMATICAL ABILITY

Questions : 75] [Marks : 75

I) ARITHMETICAL ABILITY :

76. Two pipes A and B can fill a tank in 12 and 18 minutes respectively. If both the pipes are opened simultaneously, then the time taken to fill the tank (in minutes)
1) $8\dfrac{1}{4}$ 2) $7\dfrac{1}{5}$
3) $7\dfrac{2}{5}$ 4) $8\dfrac{1}{3}$

77. A, B and C enter into a partnership with a capital in which A's contribution is Rs. 10,000. Out of total profit of Rs. 1,000 if A gets Rs. 500 and B gets Rs. 300, then C's capital (in Rupees) is ? (   )
1) 9000 2) 6000
3) 4000 4) 3500

78. An article sold for Rs. y yields x% profit. Then the cost price of the article (in rupees) (   )
1) $\dfrac{100 + x}{100y}$ 2) $\dfrac{100y}{100 + x}$
3) $\dfrac{100x}{100 + y}$ 4) $\dfrac{100 + y}{100x}$

79. A and B invest in a business the ratio 3 : 2. If 10% of the total profit goes for donations and if A's share is Rs. 810, then the total profit (in rupees) is ?   ( )
    1) 1550   2) 1500
    3) 1460   4) 1400

80. A Trader marks his goods at 20% above cost price and allows a discount of 10%. Then the percentage of his gain is ?   ( )
    1) 8   2) 10
    3) 12   4) 15

81. $\dfrac{2^{4n+1} - 2^2 \, 4^{2n-1}}{16^n}$ ( )
    1) 0   2) 4
    3) 2   4) 1

82. $\dfrac{(0.63)^2 + (0.05)^2 + (0.032)^2}{(0.062)^2 + (0.005)^2 + (0.0032)^2} =$ ( )
    1) 1   2) 10
    3) 100   4) 1000

83. If $1.8x = 0.06y$, then the value of $\dfrac{y-x}{y+x}$ is
    1) $\dfrac{0.026}{0.031}$ 2) $\dfrac{0.27}{0.31}$ ( )
    3) $\dfrac{29}{31}$ 4) $\dfrac{2.8}{3.1}$

84. Two numbers are in the ratio 4 : 7. If 14 is added to each, they are in the ratio 5 : 7, then the numbers are ?
    1) 20 and 35   2) 15 and 18   ( )
    3) 12 and 21   4) 16 and 28

85. The incomes of A and B are in the ratio 3 : 4 and their expenditures are in the ratio 4 : 5. If B saves one third of his income, then the ratio of their savings is ?   ( )
    1) 13 : 21   2) 13 : 20
    3) 14 : 23   4) 12 : 19

86. $\dfrac{6}{2\sqrt{3}+\sqrt{6}} - \dfrac{1}{\sqrt{3}-\sqrt{2}} + \dfrac{4}{\sqrt{6}-\sqrt{2}} =$ ( )
    1) $\sqrt{3}$ 2) $\sqrt{2}$
    3) $\sqrt{6}$ 4) $\sqrt{2}-\sqrt{3}+\sqrt{6}$

87. $\dfrac{\sqrt{7}+\sqrt{5}}{\sqrt{7}-\sqrt{5}} + \dfrac{\sqrt{7}-\sqrt{5}}{\sqrt{7}+\sqrt{5}} =$ ( )
    1) $2\sqrt{35}$ 2) $-2\sqrt{35}$
    3) 12   4) 14

88. The number of divisors excluding 1 and itself of the number 8625 is ?   ( )
    1) 15   2) 14
    3) 12   4) 13

89. The number of integers between 200 and 600, that are divisible by 2, 3 and 7 is ?   ( )
    1) 14   2) 9
    3) 11   4) 10

90. If three natural numbers, whose LCM is 360, are in the ratio 2 : 3 : 4, then the largest of them is ?
    1) 60   2) 90   ( )
    3) 120   4) 180

91. A Car starts at 8 A.M. with a speed of 65 kmph. Another car follows it at 9 A.M. with a speed of 70 kmph. The two cars will meet in the evening at time?   ( )
    1) 4   2) 6
    3) 8   4) 10

92. For integers a and b, if $a \oplus b$ denotes the remainder when $a + b$ is divided by 9, then $(4 \oplus 6) \oplus 8 = ?$ ( )
    1) 0   2) 1
    3) 2   4) 3

93. $(0.333.....)^2 = ?$ ( )
    1) $0.\overline{09}$ 2) $0.0\overline{9}$
    3) $0.\overline{1}$ 4) $0.\overline{9}$

94. If the base radii of two cylinders are in the ratio 2 : 3 and their heights are in the ratio 9 : 5, then the ratio of their volumes is ?   ( )
    1) 11 : 8   2) 4 : 5
    3) 1 : 4   4) 5 : 14

95. If x is a real number, then the maximum value of $f(x) = 13 - |7 + x|$, is ?   ( )
    1) 6   2) 26
    3) 13   4) 20

96. The average age of 5 children is 8 years. If the age of the father of the children is included the average becomes 13, then the age of the father (in years) is ?
    1) 30   2) 34   ( )
    3) 37   4) 38

97. The greatest possible length of a scale which can be used to measure exactly the lengths 1m, 20cm, 9m, 1m 5cm and 1m 65cm is ?   ( )
    1) 35cm   2) 25cm
    3) 5cm   4) 15cm

98. The ascending order of the numbers $\frac{7}{8}, \frac{9}{11}, \frac{5}{7}$ is?

1) $\frac{7}{8}, \frac{9}{11}, \frac{5}{7}$ 2) $\frac{9}{11}, \frac{7}{8}, \frac{5}{7}$ ( )

3) $\frac{5}{7}, \frac{9}{11}, \frac{7}{8}$ 4) $\frac{5}{7}, \frac{7}{8}, \frac{9}{11}$

99. Among the surds $\sqrt{2}, \sqrt[3]{4}, \sqrt[3]{2}$ and $\sqrt[4]{6}$, the largest one is ?   ( )

1) $\sqrt{2}$ 2) $\sqrt[3]{4}$

3) $\sqrt[3]{2}$ 4) $\sqrt[4]{6}$

100. If the salary of A is 20% more than the salary of B, then the salary of B is lessthan that of A by ?

1) $16\frac{2}{3}\%$ 2) 20%   ( )
3) 18%   4) 15%

101. A Man sells 320 mangoes at the cost price of 400 mangoes. Then the percentage of his gain is?

1) 10   2) 15   ( )
3) 20   4) 25

102. Two taps can fill a tub in 5 minutes and 7 minutes respectively. Another pipe can empty it in 3 minutes. If all the three are kept open simultaneously, then the time (in minutes) to fill the tub is ?   ( )

1) 105   2) 115
3) 120   4) 135

103. A, B and C can do a piece of work in 4, 5 and 7 days respectively. If they get Rs. 415 for working together to complete the job, then A's share is (in rupees)?   ( )

1) 170   2) 185
3) 175   4) 180

104. A car covers a certain distance going at a speed of 60 kmph and returns to the starting point at a speed of 40 kmph. Then the average speed of the car (in kmph) for the whole journey is ?

1) 56   2) 60   ( )
3) 48   4) 52

105. A can do $\frac{1}{5}$ to the work in 2 days and B can do $\frac{1}{3}$ rd of it in 5 days. Then the number of days that both A and B can do the work is ? ( )

1) 10   2) 8
3) 6   4) 4

106. A Rectangular tank has 2.6 cubic meters of water. If the area of the base of the tank is 6500 sq.cms., then the depth of water (in meters) is ?

1) 3.5   2) 4   ( )
3) 5   4) 8

107. A Cylinder is of height 8 meters and has base radius 8 meters. The maximum length (in meters) of the rod that can be place in it is?

1) $\sqrt[8]{5}$ 2) $\sqrt[8]{2}$ ( )

3) $\sqrt[8]{3}$ 4) $8(2\pi + 1)$

108. The inner and outer radii of a circular track are respectively 21m and 28m. The cost of levelling the track at Rs. 5 per square meter is (in rupees) ?   ( )

1) 1078   2) 2156
3) 4312   4) 5390

109. The radius of the circle (in feet) that can circumscribe a rectangle of length 12 feet and breadth 5 feet, is ?   ( )

1) 6   2) 6.5
3) 7   4) 8.5

110. The curved surface area of a cylinder is thrice the area of its base. Then the ratio of its base radius and height is?   ( )

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

II) ALGEBRAICAL AND GEOMETRICAL ABILITY

111. $16^{1/3} \times 16^{1/9} \times 16^{1/27} \times \ldots \infty$?   ( )

1) 1   2) 4
3) 6   4) 16

112. If $(n + 2)! = 12n!$, then n = ?   ( )

1) 2   2) 4
3) 6   4) 8

113. If the first two terms in an H.P. are 6 and 3 then the third term is ?   ( )

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

114. $\tan\left(6\right) \quad \left(4\right) \quad \left(3\right)$

1) A.P.   2) H.P.
3) G.P.   4) The ratio 1 : 2 : 3

115. If the product and sum of the roots of a quadratic equation are $\frac{1}{4}$ and $\frac{5}{4}$ respectively, then the equation is ? ( )
1) $12x^2 - 4x + 3 = 0$　　2) $x^2 - 15x + 3 = 0$
3) $4x^2 - 5x + 1 = 0$　　4) $4x^2 + 5x - 1 = 0$

116. If the nth term of an A.P. is 3n+2 then the sum of the first 8 terms is ? ( )
1) 112　　　　　　2) 124
3) 136　　　　　　4) 169

117. If the wheel of a motor cycle makers 1000 revolutions in moving a distance of 550 meters, then the radius (in centimeters) of the wheel is ?
1) 8.75　　　　　　2) 17.5　　( )
3) 16　　　　　　4) 55

118. The inverse of the matrix $A\begin{pmatrix} 3 & 5 \\ 1 & 2 \end{pmatrix}$ is ?

1) $\begin{pmatrix} 2 & 5 \\ 1 & -3 \end{pmatrix}$　　2) $\begin{pmatrix} 2 & -5 \\ -1 & 3 \end{pmatrix}$　( )

3) $\begin{pmatrix} -2 & -5 \\ 1 & 0 \end{pmatrix}$　　4) $\begin{pmatrix} 5 & -3 \\ 2 & -1 \end{pmatrix}$

119. If $\begin{pmatrix} 2 & -1 \\ 1 & 1 \end{pmatrix}\begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 4 \\ 5 \end{pmatrix}$, then $2x - 3y = ?$ ( )
1) 1　　　　　　2) -1
3) 2　　　　　　4) 0

120. If α and β are the roots of the equation $ax^2 + bx + c = 0$, where a and c are not equal to zero then $\frac{\alpha}{\beta^2} + \frac{\beta}{\alpha^2} = ?$ ( )
1) $\frac{3abc - b^3}{ac^3}$　　2) $\frac{3abc - b^3}{ac^2}$
3) $\frac{3abc - b^3}{ac}$　　4) 0

121. $(\tan 47° + \cot 47°)(\sin 47° \times \cos 47°) = ?$
1) 0　　　　　　2) 1　　( )
3) $\frac{1}{2}$　　　　　　4) $\frac{\sqrt{3}}{2}$

122. The area of the quadrilateral formed by the points $A = (a, 0)$, $B = (0, a)$, $C = (-a, 0)$ and $D = (0, -a)$ is ? ( )
1) $4a^2$　　　　　　2) $2a^2$
3) a^2　　　　　　4) $8a^2$

123. If the point of intersection of the lines $x + 2y - 10 = 0$ and $2x - y - 5 = 0$ lies on the straight line $x - 2y + k = 0$, then the value of k is ?
1) -2　　　　　　2) 2　　( )
3) 0　　　　　　4) 1

124. The image of the origin with respect of the straight line $4x + 3y - 25 = 0$ is ? ( )
1) (2, 3)　　　　　2) (8, 6)
3) (-8, 6)　　　　4) (6, -8)

125. If $x + y + \mu = 0$ and $\lambda x - 5y - 5 = 0$ represent the same line then $\lambda + \mu = ?$ ( )
1) 1　　　　　　2) 0
3) -4　　　　　　4) -1

126. For $0 < \theta < \pi$ and $\theta \ne \frac{\pi}{2}$, if $1 + \sin\theta + \sin^2\theta + \dots = 4 + 2\sqrt{3}$, then $\sin\theta = ?$ ( )
1) $\frac{1}{\sqrt{2}}$　　　　　2) $\frac{\sqrt{3}}{2}$
3) $\frac{1}{2}$　　　　　　4) $\frac{2}{\sqrt{5}}$

127. Three hundred meters away from the foot of a tower, the top of the tower is observed at an angle of elevation of 30°. Then the height of the tower (in meters) is ? ( )
1) 100　　　　　　2) $100 + \sqrt{3}$
3) $100 - \sqrt{3}$　　　　4) $100\sqrt{3}$

128. If $\tan\theta + \cot\theta = 2$, then $^3\theta + \cot^6\theta = ?$
1) 1　　　　　　2) 2　　( )
3) 8　　　　　　4) 16

129. If the points (x, 2), (-3, 4) and (7, -1) are collinear, then the value of x is ? ( )
1) 1　　　　　　2) 0
3) -1　　　　　　4) 2

130. If p is a statement, then which of the following is a tautology ? ( )
1) $p \wedge (\sim p)$　　　2) $p \vee (\sim p)$
3) $\sim(\sim p)$　　　　4) $(\sim p) \wedge (\sim p)$

131. If $A = \{n \in Z : 1 \le n \le 40$ and 3 divides n$\}$, and $B = \{n \in Z : 1 \le n \le 35$ and 6 divides n$\}$, then $A - B = ?$ ( )
1) ϕ　　　　　2) {3, 9, 15, 21, 27, 33, 39}
3) A　　　　　4) B

132. If A and B are any two sets then $(A^c \cup B) \cap B^c\}^c$?
    1) A   2) $A \cup B$ (   )
    3) A^c 4) B

133. The set of values of x that satisfy $|5x-3| = 7$, is ?   (   )
    1) $\left\{\dfrac{4}{5}, 2\right\}$ 2) $\left\{-\dfrac{4}{5}, -2\right\}$
    3) $\left\{-\dfrac{4}{5}, +2\right\}$ 4) $\{3, 7\}$

134. If $x^2 - 1$ divides $x^3 + ax^2 - bx + 6$, then the ordered pair (a, b) = ?   (   )
    1) (6, 1)   2) (−6, −1)
    3) (−6, 1)   4) (6, −1)

135. If $f(x) = \dfrac{1}{x}$, $x \neq 0$ and $f^n(x) = f(f^{n-1}(x))$, then $f^{50}\left(\dfrac{1}{50}\right) = ?$ (   )
    1) 1   2) 100
    3) 50   4) $\dfrac{1}{50}$

136. If $3^{x+1} + 2^{2x+1} = 270$, then x = ?   (   )
    1) 1   2) 2   3) 0   4) 4

137. The 9th term in the expansion of $\left(\dfrac{a}{3} - \dfrac{b}{2}\right)^{12}$ is?
    1) $\dfrac{55a^4b^8}{2403}$ 2) $\dfrac{55a^4b^8}{2304}$ (   )
    3) $\dfrac{55a^8b^4}{2304}$ 4) $\dfrac{55a^4b^8}{2304}$

138. The number of integral terms in the expansion of $(5^{1/2} + 7^{1/8})^{1024}$ is ?   (   )
    1) 129   2) 128
    3) 130   4) 132

139. $\underset{x \to \infty}{Lt} \dfrac{\sqrt{x^2+1}}{2x-1} = ?$ (   )
    1) 0   2) 1
    3) $\dfrac{1}{2}$ 4) $-\dfrac{1}{2}$

140. $\dfrac{1+\sec A}{2\tan A} + \dfrac{\tan A}{2(1+\sec A)} = ?$ (   )
    1) sin A   2) sec A
    3) cosec A   4) cos A

(iii) STATISTICAL ABILITY :

141. The arithmetic mean of the prime numbers lessthan 10 is ?   (   )
    1) 4.5   2) 4
    3) 3.6   4) 4.25

142. If σ is the standard deviation of $x_1, x_2, ..., x_{100}$ and c is a constant, then the standard deviation of $x_1 + c, x_2 + c, ..., x_{100} + c$ is ?   (   )
    1) $\sigma + c$ 2) $c\sigma$
    3) σ 4) $(\sigma c)^2$

143. If the median and mode of a distribution are respectively 24.375 and 24.125 then its mean is ?
    1) 24.5   2) 24.25   (   )
    3) 48.5   4) 24

144. A Bag contains 3 red balls, 4 white balls and 7 black balls. The probability of drawing a red or a black ball is ?   (   )
    1) $\dfrac{4}{7}$ 2) $\dfrac{1}{7}$
    3) $\dfrac{5}{7}$ 4) $\dfrac{3}{7}$

145. If a die is thrown, then the probability of getting an even number or a number greaterthan 3, is?
    1) $\dfrac{1}{2}$ 2) $\dfrac{2}{3}$ (   )
    3) $\dfrac{1}{3}$ 4) $\dfrac{1}{6}$

146. The mean deviation of the scores 3, 5, 7, 9 and 11 from their arithmetic mean is ?   (   )
    1) 0   2) 2
    3) 2.4   4) 2.5

147. The median of 65, 42, 59, 70, 82, 25, 92, 49, 30 and 61 is ?   (   )
    1) 59   2) 60
    3) 61   4) 49

148. The variance of the observations 6, 7, 5, 4 and 8 is?   (   )
    1) $\sqrt{2}$ 2) $\sqrt{3}$
    3) 2   4) 3

149. The arithmetic mean of the numbers a, a+2d, a+4d, ..., a + 2nd, is ?   (   )
    1) a+nd   2) a+(n−1)d
    3) (n−1)d   4) $a + \dfrac{nd}{2}$

150. If two dice are thorwn simultaneously, then the probability of having 6 on one die and any number other than 6 on other die, is ? ( )

1) $\frac{1}{6}$ 2) $\frac{5}{6}$

3) $\frac{5}{36}$ 4) $\frac{31}{36}$

SECTION- C
COMMUNICATION ABILITY

Questions : 50   Marks : 50

PART - 1

Choose the correct meaning for the word :

151. Enigmatic? ( )
   1) Puzzling   2) Sharp
   3) Problematic   4) Docile

152. Omniscient? ( )
   1) All powerful   2) Indefatigable
   3) All knowing   4) Indomitable

153. Flagrant? ( )
   1) Scented   2) Shameless
   3) Patriotic   4) Burning

154. Ubiquitous? ( )
   1) Somewhere   2) Everywhere
   3) Nowhere   4) Hardware

155. Tardy? ( )
   1) Quick   2) Sluggish
   3) Dirty   4) Progressive

156. Incongruous? ( )
   1) Out of time   2) Out of country
   3) Out of space   4) Out of place

Fill in the blank choosing the correct word :

157. We must always resolve our differences- ?
   1) Amiably   2) Arguably ( )
   3) Amicably   4) Affably

158. The study of coins is called ? ( )
   1) Archaeology   2) Palaeontology
   3) Orthography   4) Numismatics

159. A man with a split personality is a _____ ?
   1) lunatic   2) Misanthrope ( )
   3) Sadist   4) Schizophrenic

160. It wasn't very ____ of you to ring me up at the office during working hours? ( )
   1) discreet   2) discrete
   3) distinguished   4) delinquent

PART - 2

Choose the correct answer :

161. SEBI stands for ? ( )
   1) Security and Economic Board of India
   2) Security and Economic Business of India
   3) Securities and Exchange Board of India
   4) Securities and Exchange Business of India

162. REPO rate means? ( )
   1) The rate at which the RBI absorbs liquidity
   2) The rate at which the RBI lends to banks
   3) The rate at which the RBI discounts the bills of banks
   4) The rate at which banks are expected to lend money

163. A point where two or more computer networks meets and can exchange data is called a ?
   1) Modem   2) Junction ( )
   3) Gateway   4) Server

164. A kilobyte is ? ( )
   1) 1000 bytes   2) $(2^3)^{10}$ bytes
   3) 1024 bytes   4) $(1000)^8$ bits

165. Classified advertising means ? ( )
   1) Commercial messages arranged in a newspaper according to the interests of the readers
   2) Advertisement by people who donot like to disclose their identity
   3) Messages requiring clearance by the Advertising Society of India
   4) Messages cleared by the Press Information Bureau of the Government concerned

166. URL is the abbreviation of ? ( )
   1) Uniform Resource Locator
   2) User Reference Location
   3) Uninterrupted Relay Leveller
   4) Uninterrupted Reply Locator

167. COBOL is the abbreviation of ? ( )
   1) Comprehensive Business Organization Language
   2) Comprehensive Business Oriented Language
   3) Common Business Oriented Language
   4) Concise Business Organization Language

168. GDP is ? ( )
   1) Gross Domestic Product
   2) Gross Data Preparation
   3) Growing Demand Price
   4) General Data Project

169. One who accesses a system illegally is called a ?
   1) Hawker   2) Browser ( )
   3) Spammer   4) Hacker

170. Copytests are intended to test ? ( )
1) the effectiveness of communication of an advertisement
2) the original feature of an official draft
3) the fidelity of communication network in an organisation
4) the capacity of duplicating equipment in an office.

PART - 3

Choose the correct answer :

171. Mary : May I speak to Mr. Brown, please?
Robert : You cannot. He is in the bathroom.
In the above conversation
1) Robert is rude
2) Robert is polite
3) Robert is formal
4) Robert is pleasant

172. "It isn't so foggy today as it was yesterday', I remarked". The Indirect Speech form of this sentence is ? ( )
1) I remarked that it wasn't so foggy that day as it was the previous day
2) I remarked that it wasn't so foggy that day as it had been yesterday
3) I remarked that it wasn't so foggy that day as it had been the day before
4) I remarked that it wasn't so foggy that day as it has been the previous day

173. "Burglars broke into the house." The passive voice form of this sentence is ? ( )
1) The house was broken
2) The burglars were broke
3) The house has been broken into
4) The house was broken into

174. "I wish I knew German". In this sentence the speaker ? ( )
1) wants to learn German
2) does not know German
3) knows German
4) knew German in the past

175. "Would you care for a cup of tea, Mr. Kishore?" In this sentence the speaker ? ( )
1) wants to know whether Kishore likes tea or not
2) is inviting Kishore to have a cup of tea
3) is requesting Kishore to offer him a cup of tea
4) wants to know whether Kishore can carefully drink a cup of tea

176. "John is a bull in a china-shop". This sentence means? ( )
1) John is strong and steady
2) John is sturdy-looking but weak
3) John is irresponsible
4) John is rough and clumsy

177. "I'm afraid your answer is wrong". In this sentence "I'm afraid" means? ( )
1) I'm sorry 2) I'm frightened
3) I'm worried 4) I'm surprised

Fill in the blank with the appropriate phrase/verb/ preposition :

178. Microsoft has recently .... a book-sized new version PC ? ( )
1) unvelled 2) unearthed
3) unplugged 4) unleashed

179. The University ...... the honorary degree on the celebrity ? ( )
1) deferred 2) conferred
3) confirmed 4) collocated

180. Her classmates were jealous of her success; they were therefore constantly running her ......? ( )
1) across 2) against
3) off 4) down

181. I tried but could not prevail ...... him? ( )
1) in 2) with
3) on 4) for

182. I wonder if your message got .... to the audience ? ( )
1) across 2) over
3) through 4) round

183. You .... inform the police about the incident? ( )
1) have better 2) may better
3) had better 4) might better

184. After not speaking to each other for years, the two brothers decided to ....? ( )
1) bury the axe 2) bury the hatchet
3) bury the hatchet 4) bury the helmets

185. The firemen have been trying hard to .... the fire? ( )
1) put down 2) put away
3) put off 4) put out

PART - 4

Read the following passage and answer questions 186 - 190 :

A traveller who studies the menu on a transatlantic liner or, indeed, in some American hotels has a paralysing sensation. There is so much to eat—far more than he can possibly digest. One sometimes has the same

feeling about education, which also offers an enormous bill of fare. Almost any dish can be found in it, from Greek to stenography, from music to economics. How are we to choose from the bewildering profusion? What dishes ought we to order if we wish not merely to fill ourselves up, but to get the nourishment necessary to a healthy life, to become really educated people?

What is the aim of education? Its aim is to know the first-rate in any subject that we study, with a view to achieving it as nearly as our powers allow. We should cease to think that we go to school or college to pass examinations or to secure degrees or diplomas or to satisfy our teachers or parents, though these may be and are incidental and limited objectives.

The difficulty with education, as with life, is that it has so many fields. So what fields to study? An educated man should know what is first-rate in those activities which spring from the creative and intellectual faculties of human nature, such as literature, art, architecture, and music. Where does one learn what is first-rate? The only way to learn it is to meet it. A medical student will learn something from seeing a great surgeon in the operating theatre, or a great doctor in the hospital wards, which all the text books in the world cannot tell him. In any field the only way to learn what is first-rate is to see it. And the same surely is true in life itself. How is one to acquaint with the good life and find people who have lived it. Who are they? And where shall we meet them? Humanities answer the need. In all other subjects we see only a part of human nature, and not the best or the most characteristic part.

If, however, we wish to see main, as I put it, full face, in a lively form, or these three, it is to literature that we must turn. Is there any better way of learning what men are, so far as it can be learned from books and not from meeting human beings?

186. The author prefers literature to other subjects because? ( )
1) It offers a comprehensive picture of man
2) It offers an enormous bill of fare
3) In its profusion it illustrates a part of human nature
4) It helps us meet human beings and understand them

187. Humanities are a source book of knowing about? ( )
1) Good life and how it is lived
2) The experience of seeing
3) Seeing a surgeon in the operating theatre
4) The fact that seeing is believing

188. What is common to the menu offered on a transatlantic liner and in the field of education? ( )
1) Tasty dishes   2) Paralysed feeling
3) Wide-ranging variety
4) Greek and stenography

189. According to the author of the passage?
1) Knowing is learning ( )
2) Speculating is learning
3) Writing is learning 4) Seeing is learning

190. The higher objective of education is? ( )
1) to plod through within one's limitations
2) to identify and reach the peak
3) to secure degrees or diplomas
4) to appease one's parents and teachers

Read the following passage and answer questions 191 - 195 :

The most extraordinary dream I ever had was one in which I fancied that, as I was going into a theatre, the cloak-room attendant stopped me in the lobby and insisted on my leaving my legs behind. I was not surprised; but I was considerably annoyed. I said I had never heard of such a rule at any respectable theatre before, and that I considered it a most absurd regulation. The man replied that he was very sorry, but that those were his instructions. People complained that they could not get to and from their seats comfortably, because other people's legs were always in the way, and it had, therefore, been decided that everybody should leave their legs outside. It seemed to me that the management, in making this order, had gone beyond their legal right; and, under ordinary circumstances, I should have disputed it. However, I didn't want to make a disturbance; and so I sat down and meekly prepared to comply with the demand. I had never before known that the human leg could be unscrewed. I had always thought it was more securely fixed. But the man showed me how to undo them, and I found that they came off quite easily. The discovery did not surprise me any more than the original request that I should take them off. Nothing does surprise one in a dream.

191. What surprised the writer? ( )
1) The attendant asking him to leave the legs behind
2) The rule to leave the legs behing
3) The dream   4) Nothing

192. What kind of dream does the writer say he had? ( )
1) Funny   2) Terrible
3) Unusual   4) Wonderful

193. How did the writer feel about being asked to leave his legs behind? ( )
1) Surprised   2) Happy
3) Scared   4) Angry

194. The cloak-room attendant asked everyone to leave their legs behind because? ( )
1) He liked it
2) He was instructed to do so
3) He did not have legs
4) He wanted to fight with everyone who came to the theatre

195. When the writer was asked to leave his legs behind, he ? ( )

1) did not do so   2) was not able to do so

3) did so   4) ran away

Read the following passage and answer questions 196 - 200 :

Plenty of people will try to give the masses an intellectual food by trying to indoctrinate masses with a set of ideas and judgements constituting the creed of their profession or party. But culture works differently. It does not try to teach down to the level of inferior classes. It seeks to do away with classes; to make the best that has been thought and known in the world current everywhere; to make men live in an atmosphere, where they may use ideas freely, -nourished, and not bound by them.

The men of culture are the true apostles of equality. The great men of culture are those who have had a passion for diffusing, for making prevail, for carrying from one end of society to the other, the best knowledge, the best ideas of their time; who have laboured to divest knowledge of all that was harsh, uncouth, difficult, abstract, professional, exclusive; to humanise it, to make it efficient outside the clique of the cultivated and the learned, yet still remaining the best knowledge and thought of the time, and a true source, therefore, of good culture. Generations, will pass and literary monuments will accumulate, but this principle will hold on.

196. Great men have tried to free culture from ?

1) its confinement by kings alone ( )

2) its confinement by politicians

3) its confinement by a coteries

4) its confinement by educationists

197. Great men of culture have always tried to ?

1) Monopolise culture ( )

2) Exploit culture for selfish ends

3) Commercialise culture

4) Humanise culture

198. Culture ? ( )

1) Indoctrinates people

2) Preaches religion to people

3) Does not indoctrinate people

4) Vulgarizes people

199. Culture promotes ? ( )

1) The autocracy of certain ideas

2) The destruction of ideas

3) The monopoly of ideas

4) A democratic dissimmination of ideas

200. Culture? ( )

1) Encourages class distinctions

2) Annihilates the barrier of classes

3) Instigates class distinctions

4) Offers an analysis of class distinctions

KEY

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