

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 an appropriate choice from (1) to (4) as per the following guidelines :

- Mark choice (1) If the statement I alone is sufficient to answer the question;
 - Mark choice (2) If the statement II alone is sufficient to answer the question;
 - Mark choice (3) If both the statements I and II are sufficient to answer the question but neither statement alone is sufficient;
 - Mark choice (4) If both the statements I and II together are not sufficient to answer the question and additional data is required.
- What is the area of the circle?
I) The centre of the circle is (0, 0)
II) The point (2, 3) lies within the circle.
 - What is the value of $2x + 3y$?
I) $x + y = 2$ II) $3x - 2y = 1$
 - What is the value of $p^3 + q^3$?
I) $p^2 + q^2 = 74$ II) $pq = 35$
 - After how much time will A meet B ?
I) A and B are at a distance of 50 metres from each other
II) A and B are moving in the opposite directions with respective speeds of 10 kmph and 15 kmph.
 - If $a > 0$ then is $a > b$?
I) $a^2 > b^2$ II) $\frac{a}{b} = \frac{2}{3}$
 - Is $g : \mathbb{R} \rightarrow \mathbb{R}$ an even function?
I) $g(x) = g(-x)$ for every $x \in \mathbb{R}$
II) $g(x)$ is a polynomial of even degree
 - What is the cost price of the article?
I) The selling price of the article is Rs. 50
II) The profit is 10%.
 - What is the positive integer value of x ?
I) $16 < 5x + 1 < 26$ II) $4 < x^2 < 25$
 - What is the present age of the father?
I) The sum of the present ages of the father and his son is 46.
II) 5 years ago the father's age was 5 times that of his son.
 - How many elements are there in the set A?
I) $A \cup B$ has 25 elements.
II) $B - A$ has 15 elements.
 - How many brothers does A have ?
I) A's father has four children.
II) A is the only daughter of her parents
 - In the right-angled $\triangle ABC$ what is $\angle A$
I) $\angle B = 30^\circ$ II) $\angle A + \angle C > 90^\circ$
 - What is the perimeter of the circular sector?
I) The angle of the sector is $\frac{\pi}{3}$.
II) The area of the sector is 6π square units.
 - Is the product $a.b$ an irrational number?
I) a is an irrational number.
II) b is an irrational number.
 - Is the value of x unique?
I) $x < 0$ II) $x^2 = 16$
 - Is $x > y$?

- What is the area of $\triangle ABC$?
I) $\angle ABC = 60^\circ$ II) $AB = BC = CA = 4$
- What is the average of a, b, c and d ?
I) a, b, c and d are primes.
II) a, b, c and d lie in $\{10, 11, 12, \dots, 20\}$
- Is $\triangle ABC$ right-angled?
I) A lies on the circle with BC as a diameter
II) A, B and C lie on a circle.
- What is the value of V ?
I) V is the volume of a cylinder.
II) The cylinder is of height h units.

II) PROBLEM SOLVING**(a) Sequence and Series:**

Note : In each of the questions numbered 21 to 35 a sequence of numbers or letters that follow a definite pattern is 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 .

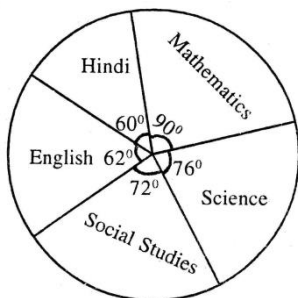
- 5, 10, 30, 150, 1050
1) 10550 2) 11000 3) 11525 4) 11550
 - $1\frac{8}{9}, 2\frac{2}{9}, 2\frac{5}{9}, \underline{\hspace{1cm}}, 3\frac{2}{9}$
1) $2\frac{3}{9}$ 2) $2\frac{5}{9}$ 3) $2\frac{7}{9}$ 4) $2\frac{8}{9}$
 - (2,5, 9), (6,8,7), (10, 11,5),
1) (14, 14,3) 2) (14, 13,4) 3) (12, 14, 3) 4) (12, 13,4)
 - $\frac{1}{2}, \frac{8}{5}, \frac{27}{10}, \frac{64}{17}, \underline{\hspace{1cm}}, \frac{216}{37}$
1) $\frac{35}{16}$ 2) $\frac{125}{26}$ 3) $\frac{75}{18}$ 4) $\frac{81}{19}$
 - The value of the 13th term in the sequence 1, 3, 6, 10, 15, ... is
1) 97 2) 91 3) 89 4) 85
 - 24, 35, 48, 63, , 99, 120
1) 72 2) 79 3) 80 4) 85
 - DFIK, GILN, JLOQ,
1) MPRO 2) MORP 3) MRPO 4) MORT
 - 2A4, 3E5, 4I6, , 6Q8
1) 5M7 2) 5N7 3) 5P7 4) 5S7
 - BDYZCA, CEXYDB, DFWXEC,
1) BDVWFC 2) EGVWFD 3) EGVWDF 4) BDVWCF
 - ABDH, DEGK, GHJN, , MNPT
1) JKQM 2) JLNP 3) JKMQ 4) JLPN
 - 50: 65 :: 290 :
1) 170 2) 226 3) 260 4) 325
 - 289: 324 :: : 64
1) 36 2) 49 3) 55 4) 76
 - $L \times M : 12 \times 13 :: U \times W :$
1) 21×23 2) 21×22 3) 21×31 4) 24×26
 - Foot : Inch :: Year :
1) Day 2) Week 3) Month 4) Decade
 - 441 : 961 :: 21 :
1) 11 2) 31 3) 61 4) 41
- Note: In questions 36 to 45, pick the odd thing out.**
- 1) 35 2) 77 3) 117 4) 143
 - 1) 14 2) 34 3) 62 4) 96
 - 1) (2, 3, 13) 2) (3,4,25) 3) (4,5,41) 4) (5, 6, 71)
 - 1) July 2) August 3) September 4) October
 - 1) 11 2) 111 3) 111111 4) 111111111
 - 1) $\frac{19}{15}$ 2) $\frac{13}{11}$ 3) $\frac{7}{5}$ 4) $\frac{3}{2}$
 - 1) (0111)₂ 2) (1101)₂ 3) (1111)₂ 4) (10001)₂
 - 1) 2W3 2) 1Q7 3) 1M3 4) 1R9
 - 1) 98 2) 143 3) 195 4) 255

45. 1) 37 2) 47 3) 57 4) 67

(b) Data Analysis :

Note for Questions 46 to 50 :

The following Pie diagram shows the marks secured by a student in different subjects in an examination. If the student scored 135 marks in Mathematics, answer the questions 46 to 50 after studying the Pie-chart.



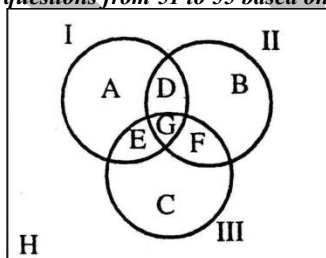
46. What is the total number of marks secured by the student in all the subjects put together?
1) 360 2) 450 3) 540 4) 720
47. How many marks did he score in Science?
1) 108 2) 114 3) 120 4) 136
48. How many more marks did the student score in Science and English put together than he scored in Social Studies and Hindi put together?
1) 9 2) 18 3) 27 4) 45
49. The ratio of the marks scored by him in Hindi to the marks scored 'in Social Studies, is
1) 2 : 3 2) 3 : 4 3) 4 : 5 4) 5 : 6
50. Out of the total marks scored by him in the examination, the percentage of marks scored in Social Studies is
1) 15 2) 20 3) 25 4) 30

Note for Questions 51 to 55 :

Each of the integers from 1 to 16 are to be placed on the Venn diagram given below in the appropriate regions A to H. Take

- $S = \{\text{the set of Integers from 1 to 16}\}$
 $I = \{\text{The set of odd integers from 1 to 16}\}$
 $II = \{\text{The set of perfect square: integers from 1 to 16}\}$
 $III = \{\text{The set of prime integers from 1 to 16}\}$
 $H = S - \{I \cup II \cup III\}$

Answer the questions from 51 to 55 based on this data.



51. Which regions in the diagram are empty (not represented) ?
1) G only 2) C and G only 3) A and F only
4) G and F only
52. Which regions contain a single integer?
1) Band D only 2) G and D only 3) A and C only
4) E and B only
53. Which regions contain five integers?
1) E and H only 2) D and B only 3) B only
4) A and C only
54. Which regions contain two integers?
1) E and F only 2) B and D only 3) A and E only
4) C only

55. The number of elements contained in the regions E and D put together is

- 1) 5 2) 6 3) 7 4) 8

(c) Coding and Decoding Problems:

Notes to Questions: 56 to 60 :

In a code, the n^{th} letter in English alphabet is coded to K^{th} letter, where $K = 3n + 2, (\text{mod } 26), 1 \leq K \leq 26$. For example, the 5th letter E is coded as Q, since $3 \times 5 + 2 = 17 \equiv 17 (\text{mod } 26)$ and Q is the 17th letter. The reverse of this process is used for decoding. Based on this coding and decoding processes, answer the questions 56 to 60.

56. The code word for STATE is
1) GJEJG 2) GJFJF 3) GJEJP 4) GJEJQ
57. The code word for MOUSE is
1) OUMQG 2) OUMGQ 3) OUGMQ 4) UGQM
58. The code word for JOLLY is
1) PASSY 2) FUPPI 3) FULLY 4) FOLLY
59. The word coded as XEDI is
1) POLE 2) PALE 3) PARK 4) PERK
60. The number of letters that are invariant in this code is
1) 1 2) 2 3) 3 4) 4

Note for questions 61 to 65 :

In a code, the n^{th} letter of an English alphabet is coded to $f(n)^{\text{th}}$ letter, where $f(n)$ is defined by

$$f(n) = \begin{cases} n + 17, & \text{if } 1 \leq n \leq 9 \\ n - 1, & \text{if } 10 \leq n \leq 18 \\ n - 18, & \text{if } 19 \leq n \leq 26 \end{cases}$$

For decoding, the reverse process is used. Based on this coding and decoding process,

answer the questions 61- 65 :

61. The code word for MANGO is
1) LSOYN 2) LRMXN 3) KRLXN 4) KTPFN
62. The code word for RHYME is
1) QZGNV 2) PYGMU 3) QYILV 4) QYGLV
63. The word that is coded as ROME is
1) APNW 2) ANPW 3) AOMW 4) AMNU
64. The code word for ICET is
1) ZUWC 2) ZVID 3) ZTVB 4) ZUTD
65. Which letter is coded as X ?
1) F 2) G 3) W 4) C

(d) Date, Time & Arrangement Problems:

66. B is the brother of A, S is the sister of B, E is the brother of D, D is the daughter of A and F is the father of S. Then the uncle of E is
1) A 2) B 3) E 4) F
67. A person X is facing North. He turns 165° in the anti-clockwise direction, then 30° in the clock-wise direction and there after 90° in the anti clockwise direction. Then X is facing
1) North-West 2) North-East 3) South-West
4) South-East
68. The ages of a son and his father was in the ratio 2 : 5 seventeen years ago. If the present age of the son is 35 years, the age of the father 5 years hence, is
1) 62 years 2) 65 years 3) 67 years 4) 68 years
69. A leap year starts with Sunday. On what day will be the second of March in that year?
1) Wednesday 2) Thursday 3) Friday 4) Saturday
70. If $a * b = a^3 + b^3 - 3ab$ then $\frac{(2 * 1) * (2 * 1)}{(2 * 1)} =$
1) 1 2) 3 3) 9 4) 27

71. If A, M, D and S denote the usual addition, multiplication, division and subtraction respectively, then $\{10 S (3 M 4) D 2\} A 3$, is equal to
1) 3 2) 7 3) 18 4) 75
72. $a * b = a + b - \frac{ab}{2}$ for all, $a, b \in \mathbb{R}$ and e is a non-zero real number, then the value of a for which $a * e = a$ is
1) 0 2) 1 3) 2 4) 3
73. B is the father of A, C is the wife of B, D is the mother of C and E is the husband of D. Then how is E related to A?
1) Grandfather 2) Mother 3) Brother-in-law
4) Father
74. In a row of six persons, D and Care immediate neighbours of E, B is the only neighbour of A and C is the neighbour of E. The possible persons occupying the two end points of the row are
1) F and B 2) A and F 3) F and C 4) C and A
75. If a clock shows 12 minutes past 5, then the angle between its two hands is
1) 86° 2) 84° 3) 80° 4) 78°

SECTION - B
MATHEMATICAL ABILITY

Questions :-75]

[Marks: 75

I) ARITHMETICAL ABILITY

76. $16^{3/4} - 8^{1/3} + 49^{1/2} =$
1) 17 2) 13 3) 3 4) -1
77. $\frac{\left[\frac{1}{a^3} \frac{1}{b^6}\right]^3 - \left[\frac{1}{a^6} \frac{1}{b^3}\right]^3}{\frac{1}{a^2} - \frac{1}{b^2}} =$
1) $\sqrt{a} + \sqrt{b}$ 2) $\frac{1}{a^3} + \frac{1}{b^3}$ 3) \sqrt{ab} 4) $(ab)^{\frac{1}{3}}$
78. If $(81)^x = \frac{1}{(243)^y}$, then $4x + 5y =$
1) 5 2) 3 3) 2 4) 0
79. If $\frac{3q}{5p} = \frac{7}{10}$ then $p:q =$
1) 6:7 2) 7:6 3) 5:9 4) 9:5
80. $\left[\frac{\sqrt{7}+\sqrt{5}}{\sqrt{7}-\sqrt{5}} + \frac{\sqrt{7}-\sqrt{5}}{\sqrt{7}+\sqrt{5}}\right]^3 =$
1) 1728 2) 1827 3) $(\sqrt{14} + \sqrt{10})^3$ 4) $(12 + 2\sqrt{35})^3$
81. The details of investment of three persons X, Y, Z in a common business are given below. Out of a profit of Rs. 900, the share of X in rupees is
- | | X | Y | Z |
|-----------------------|--------------|--------------|--------------|
| Amount Rs. | 6,000 | 7,000 | 6,400 |
| Time in months | 2 | 4 | 5 |
- 1) 110 2) 150 3) 350 4) 400
82. A train running at a speed of 90 kmph takes 20 seconds to cross a bridge of length 150 m. The length of the train in metres is
1) 350 2) 100 3) 50 4) 45
83. The least positive integer that leaves remainders 25, 37 and 53 respectively when divided by 36, 48, and 64 is
1) 576 2) 574 3) 567 4) 565
84. The least integer value of n such that $\frac{54}{n^3}$ is an even integer is
1) 1 2) -1 3) -3 4) 3
85. A and B can do a work in 12 days; Band C in 15 days; C and A in 20 days. The number of days required for all the three together to complete the work is
1) 30 2) 20 3) 16 4) 10
86. An article is sold at a profit of 20%. Had it been sold at a profit of 25%, it would have fetched Rs. 35 more. The cost price of the article (in rupees) is
1) 650 2) 700 3) 750 4) 800
87. If a pump takes 6 hours to fill $\frac{3}{7}$ th of a cistern, the total time required to completely fill the, cistern (in hours) is
1) 14 2) 13 3) 12 4) 11
88. A tank can be filled by one tap in 20 minutes and by another in 25 minutes. If both the taps are opened for 5 minutes and then the second tap is turned off, in how many more minutes the tank is completely filled?
1) 12 2) 11 3) 9 4) 6
89. If $HCF(1152, 1664) = 128$, then $LCM(1152, 1664) =$
1) 1152 2) 1154 3) 14976 4) 16872
90. What is the remainder when 2^{13416} is divided by 5?
1) 4 2) 3 3) 2 4) 1
91. A certain amount of money deposited for compound interest becomes 4 times in 4 years. In how many years will that amount be 64 times the deposited amount if it is given for the same rate of interest?
1) 18 2) 16 3) 15 4) 12
92. The perimeter of a rhombus is 100 cm and one of its diagonals is 40 cm. The area of the rhombus in sq. cm .is
1) 400 2) 500 3) 600 4) 800
93. The length of parallel sides of a trapezium are 20m and 35 m and the distance between them is 8 m. The area of the trapezium in sq.m is
1) 110 2) 220 3) 330 4) 440
94. The area of a right isosceles triangle is 4.5 sq.m. Its perimeter in metres is
1) $6+3\sqrt{2}$ 2) $3+3\sqrt{2}$ 3) $1+3\sqrt{2}$ 4) $3+\sqrt{2}$
95. A circular road runs around a circular ground. If the difference between the circumferences of the outer circle and inner circle is 66m, the width of the road in metres is (taking the value of π as $\frac{22}{7}$)
1) 10 2) 10.5 3) 9.5 4) 9
96. The height of a cone is 84 cm and the area of its base is 3850 sq. cm. The area of the curved surface of the cone in sq. cm is (taking the value of π as $\frac{22}{7}$)
1) 1010 2) 10001 3) 10010 4) 11010
97. The ratio of the weights of three solid spheres is 8 : 27 : 64. The ratio of their diameter is
1) 1: 2 : 3 2) 1: 3 : 4 3) 2: 4 : 6 4) 4: 6: 8
98. A rectangular plot is 50 m x 30m dimensions. Roads of width 2m are laid joining the mid points of opposite sides and also a path of same width running inside and along the length and the breadth of it. What is the total area of the roads and the path in sq. metres?
1) 444 2) 448 3) 928 4) 1056
99. A cylinder and a cone have the same height and the radius of the base. The ratio between the volumes of the cylinder and the cone is
1) 2: 1 2) 3 : 1 3) 2: 3 4) 3: 2
100. The side of a cube is 5 cm. Its total surface area in sq. cm. is
1) 30 2) 90 3) 150 4) 200
101. The least 3 digit positive integer x such that $x \equiv 3 \pmod{8}$ is
1) 105 2) 107 3) 108 4) 115
102. If $x + 8 \equiv 9 \pmod{2}$ Find the value of X is
1) 3 2) 4 3) 6 4) 8

103. If the sides of a rectangle are in the ratio 2 : 1 and if its area is same as that of a square of side 8 cm., then the perimeter of the rectangle in cm. is
 1) $24\sqrt{2}$ 2) $12\sqrt{2}$ 3) $8\sqrt{2}$ 4) $4\sqrt{2}$
104. The number of divisors of 36000 is
 1) 30 2) 72 3) 640 4) 720
105. $\sqrt{47 - 4\sqrt{33}} =$
 1) $\sqrt{22} - \sqrt{6}$ 2) $\sqrt{45} - \sqrt{2}$ 3) $\sqrt{44} - \sqrt{3}$ 4) $\sqrt{35} - \sqrt{12}$
106. The number of diagonals of a regular polygon with 18 sides is
 1) 189 2) 171 3) 153 4) 135
107. In a class of 70 students consisting of boys and girls, a sum of Rs. 2,350 is distributed. If each boy gets Rs. 30 and each girl gets Rs. 35, then the number of boys in the class is
 1) 40 2) 30 3) 25 4) 20
108. If n, a, b are natural numbers, $n < 9$ and $n^5 = 10a + b$, then b =
 1) 2 2) n 3) 3 4) 9
109. If $\frac{8^{\frac{3}{2}} \times 9^{\frac{4}{2}}}{27^{\frac{3}{2}} \times 16^{\frac{3}{2}}} = 2^a \cdot 3^b$ then a - b =
 1) 6/11 2) 11/6 3) 17/12 4) 12/17
110. If the perimeter of a regular hexagon is 24 cm, then its area in sq. cm. is
 1) $12\sqrt{6}$ 2) 18 3) $18\sqrt{3}$ 4) $24\sqrt{3}$
- (I) ALGEBRAICAL AND GEOMETRICAL ABILITY**
111. The unit digit of 3^{741} is
 1) 3 2) 9 3) 7 4) 1
112. If A, B, C are three sets, then $A - (B \cap C) =$
 1) $(A - B) \cap (A - C)$ 2) $A - (B \cup C)$
 3) $(A - B) \cup (A - C)$ 4) $A - (B - C)$
113. Which of the following is a tautology?
 1) $p \rightarrow (p - q)$ 2) $(p \wedge q) \rightarrow p$
 3) $(p - q) \rightarrow (p \wedge q)$ 4) $p \vee q \rightarrow p$
114. If a set A has 5 elements, then the number of subsets of A with not exceeding 4 elements is
 1) 31 2) 26 3) 5 4) 16
115. If $\cos \theta = \frac{12}{13}$ and θ not in third quadrant, then $\sin \theta + \cos \theta =$
 1) 13/17 2) 8/13 3) 9/13 4) 17/13
116. If α, β are the roots of the equation $x^2 + x + 1 = 0$, then the value of $\alpha^{28} - \beta^{56} =$
 1) -1 2) $\alpha - \beta$ 3) $\alpha + \beta$ 4) 0
117. For any positive integer n, let $A_n =$ set of all positive integral divisors of n, then the number of elements in $A_{18} \cap A_{24}$ is
 1) 4 2) 6 3) 72 4) 36
118. If a set A has 5 elements, then the number of bijections from A to A is
 1) 2^5 2) 5^5 3) 5! 4) 1
119. The equation of the straight line that makes intercepts 1/5 and 1/7 and X and Y-axes respectively is
 1) $5x + 7y = 35$ 2) $5x + 7y = 1$
 3) $7x + 5y = 35$ 4) $7x + 5y = 1$
120. The perpendicular distance from the point (2, -3) to the line $3x + 4y - 4 = 0$ is
 1) 4/5 Units 2) 2 Units 3) 2/5 Units 4) 4 Units
121. The intercept made by the line passing through the points (4, -5), (5, 1) on X-axis is
 1) 29/6 2) 31/6 3) 29 4) 31
122. $\sin 75^\circ =$
 1) $\frac{\sqrt{3}+1}{\sqrt{3}-1}$ 2) $\frac{\sqrt{3}-1}{2\sqrt{2}}$ 3) $\frac{\sqrt{3}-1}{\sqrt{3}+1}$ 4) $\frac{\sqrt{3}+1}{2\sqrt{2}}$
123. The minimum value of $7 - 5 \cos x - 12 \sin x$ is
 1) 20 2) -5 3) -6 4) 2
124. If $\sec \theta - \tan \theta = 5$, then $\sin \theta =$
 1) 12/13 2) 5/13 3) -12/13 4) 5/13
125. $\frac{\sin \theta}{\sec \theta - 1} - \frac{\sin \theta}{\sec \theta + 1} =$
 1) $2 \cos \theta \cot \theta$ 2) $2 \sin \theta \sec \theta$ 3) $2 \cos \theta \tan \theta$
 4) $2 \cot \theta \operatorname{cosec} \theta$
126. The angle of elevation of the sun, when the length of the shadow of a tower is 4 times the height of the tower, is
 1) 45° 2) $\tan^{-1} 4$ 3) 60° 4) $\tan^{-1} \frac{1}{4}$
127. If $A = \begin{bmatrix} 3 & -1 \\ 0 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 1 \\ 4 & -1 \end{bmatrix}$ then the determinant of $2a + 3b$ is
 1) 12 2) 72 3) 48 4) 60
128. The inverse of the matrix $\begin{bmatrix} \cos \theta & \sin \theta \\ \sin \theta & -\cos \theta \end{bmatrix}$ is
 1) $\begin{bmatrix} -\cos \theta & -\sin \theta \\ \sin \theta & \cos \theta \end{bmatrix}$ 2) $\begin{bmatrix} \cos \theta & \sin \theta \\ \sin \theta & -\cos \theta \end{bmatrix}$
 3) $\begin{bmatrix} -\cos \theta & \sin \theta \\ -\sin \theta & \cos \theta \end{bmatrix}$ 4) $\begin{bmatrix} -\cos \theta & \sin \theta \\ \sin \theta & \cos \theta \end{bmatrix}$
129. If $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$ and set $A=5$, then the determinant of the matrix is $\begin{bmatrix} 4a & 4b \\ 3c & 3d \end{bmatrix}$ is
 1) 20 2) 15 3) 35 4) 60
130. $\lim_{x \rightarrow 0} \frac{\sqrt{4+x} - \sqrt{4-x}}{x} =$
 1) 2 2) 4 3) 1/2 4) 1/4
131. $\tan 85^\circ \tan 50^\circ - \tan 85^\circ - \tan 50^\circ =$
 1) 1 2) -1 3) $\tan 35^\circ$ 4) $\tan 5^\circ$
132. $\lim_{\theta \rightarrow 0} \frac{\sin 7\theta - \sin \theta}{\sin 10\theta - \sin 7\theta} =$
 1) 2 2) 7/10 3) 48/51 4) ∞
133. The coefficient of $\frac{1}{x^2}$ in the expansion of $\left[\frac{2}{x^2} - 3x\right]^4$ is
 1) 36 2) -36 3) 216 4) -216
134. $\frac{d}{dx} (\log_x 10) =$
 1) 0 2) $\frac{-\log 10}{x(\log x)^2}$ 3) $\frac{-\log 10}{(\log x)^2}$ 4) $\frac{x}{\log 10}$
135. $\lim_{x \rightarrow 5} \frac{(x^2 - 4x - 5)^2}{|x - 5|} =$
 1) 6 2) -6 3) 0 4) 36
136. When $x^3 - 2x^2 - 3$ is divided by $x - 3$, the remainder is
 1) -48 2) 48 3) -6 4) 6
137. If $f(x) = \frac{1}{\sqrt{x}}$ then $f'(x)$ at $x = 4$ is
 1) -1/16 2) -1/8 3) -1/4 4) 1/8
138. The harmonic mean of 15, 10 is
 1) 12.5 2) 13 3) 13.5 4) 12
139. If $f(x) = 2^{\cot x}$, then $f'(x)$ at $x = \frac{\pi}{4}$ is
 1) $-2 \log 2$ 2) $-4 \log 2$ 3) $2 \log 2$ 4) $4 \log 2$
140. The area, in square units, of the rectangle formed by the lines $x = \pm 4$ and $y = \pm 3$ is
 1) 12 2) 48 3) 144 4) 72
- (III) STATISTICAL ABILITY**
141. The median of the following data is 8, 4, 7, 1, 1, 5, 4, 3, 9, 2, 8, 6, 7
 1) 4 2) 7 3) 5 4) 6

142. The arithmetic mean of $1^2, 2^2, 3^2, \dots, 15^2$ is
 1) 248/3 2) 248/15 3) 496/15 4) 246/3
143. The standard deviation of 105, 110, 115, 120, 125, 130, 135 is
 1) 20 2) 40 3) 30 4) 10
144. When 3, unbiased coins are tossed, the probability of getting exactly one head is
 1) 1/3 2) 3/8 3) 1/8 4) 1/2
145. When two dice are thrown together, the probability that the sum obtained on them is 7, is
 1) 5/36 2) 1/6 3) 5/6 4) 31/36
146. The probability that a number chosen at random from the set $\{1, 2, 3, \dots, 90\}$ is, divisible by 4 or 6 is
 1) 31/90 2) 37/90 3) 1/3 4) 1/12
147. If a leap year is selected at random, the probability that there will be 53 Thursdays in that year is
 1) 1/4 2) 2/7 3) 5/7 4) 6/7
148. If a 3-digit number is formed at random using the digits 0, 1, 2, 3, 4., then the probability that the number is even, (no digit is repeated) is
 1) 3/5 2) 2/5 3) 3/8 4) 5/8
149. If the median and mode of 10 observations are 12 and 16 respectively, then the mean of the data is
 1) 14 2) 15 3) 10 4) 11
150. If the arithmetic means of two data having 24 and 16 observations are 10 and 15 respectively, then the arithmetic mean of the combined data is
 1) 12.5 2) 12 3) 20 4) 13

SECTION-C
COMMUNICATION ABILITY

Questions : 50]

(Marks: 50

PART- 1

Choose the correct meaning for-the word.

151. **Insouciant**
 1) unfeeling 2) unsweetened 3) incapable
 4) unconcerned
152. **Euphoric**
 1) harmonious 2) elated 3) rural
 4) inherited
153. **Sacrilege**
 1) sacrifice of animals
 2) disrespectful treatment of holy things
 3) a religion of saints 4) a sacred place
154. **Trenchant**
 1) unclear 2) turbulent 3) penetrating
 4) agitated
155. **Craggy**
 1) smooth 2) rocky 3) wanton
 4) aloof
156. **Rendezvous**
 1) render help 2) travel plan 3) meeting place
 4) intrigue

Fill in the blank choosing the correct word:

157. We have to tolerate each other's little _____
 1) virtues 2) characters 3) foibles
 4) qualities
158. A person who is extremely careful in spending is called _____
 1) parsimonious 2) parochial 3) paranoid
 4) parasitic
159. In _____ his usual manner, he had insured himself against this type of loss.
 1) pensive 2) providential 3) indifferent
 4) circumspect

160. After a strenuous work-out, Harish felt _____ hungry.
 1) raucously 2) ravishly 3) rapaciously
 4) ravenously

PART-2

Choose the correct answer:

161. Wi Max stands for
 1) Wireless Maximum Connectivity
 2) Worldwide Interoperability for Microwave Access
 3) Wireless Interconnectivity for Maximum Access
 4) Worldwide Interconnectivity for Maximum Access
162. Spoofing means
 1) an untrusted host connecting to the network
 Pretending to be a true host
 2) Spitting virus indiscriminately along internet highway
 3) Sending unsolicited commercial messages on a large scale
 4) Willful creation of internet traffic jam
163. Computer software which converts data into information and intelligence enabling a manager to take better decisions is known as
 1) DSS 2) TPS 3) CRM 4) BPR
164. Derivative is a
 1) financial instrument 2) statutory record
 3) government directive 4) guideline by SEBI
165. ESOP means
 1) Employee Stock Option Plans
 2) Exit System Overseeing Plan
 3) Emergency Schedule Operation Plan
 4) Entry Staff Orientation Plan
166. Outsourcing means
 1) exchange of goods
 2) process of subcontracting work
 3) carrying out transactions outside the country
 4) procurement of components for manufacture
167. IMF is the abbreviation for
 1) Indian Monetary Fund
 2) International Monetary Fund
 3) International Mutual Fund
 4) International Market Forum
168. "Blogging" on the Net means
 1) stopping others from using a website
 2) expressing comments on some current issue
 3) surfing 4) hacking some sites
169. GATT stands for
 1) Geographic Agreement of Trade and Tariffs
 2) General Agreement on Tariffs and Trade
 3) Generous Agreement on Time and Trade
 4) General Agreement on Taxes and Trade
170. When Windows is busy performing a task, the mouse pointer changes to a / an
 1) hand 2) hour glass 3) arrow 4) clock

PART - 3

Choose the correct answer:

171. A: "Did you want to see me?"
 B: "Yes, if you please".
 In this conversation
 1) 'A' is being very polite 2) 'A' is being very nasty
 3) 'A' does not want to see 'B'
 4) 'A' is trying to avoid 'B'
172. His words took my breath away
 The underlined expression means
 1) shocked me 2) surprised me 3) gladdened me
 4) frightened me

173. We had almost reached the city when the accident took place. The sentence means:
 1) we had reached the city, when the accident took place
 2) we had gone way beyond the city when the accident, took place
 3) we were about to reach the city when the accident took place
 4) we were far away from the city when the accident took place
174. A: "Did the doctor give you a prescription? Do you want me to take it to the Chemist for you?"
 B: "Yes and no, thank you".
 In this sentence
 1) 'A' is a doctor. 2) 'B' refuses 'A's' help
 3) 'B' accepts 'A's' offer.
 4) 'A' wants to take 'B' to the Chemist
175. "I won't stand for such behaviour in my house".
 The speaker in this sentence
 1) angry 2) impolite 3) rude 4) intolerant
176. "I'm trying to catch up with my work since I was ill for the last two days".
 The speaker is
 1) lazy 2) conscientious 3) careful
 4) irresponsible
177. "When export sales began to decline, our hopes of business success plummeted".
 The speaker in this sentence expresses
 1) hope 2) excitement 3) dejection 4) elation

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

178. I have seen the film and
 1) so she has 2) she also has 3) she too has
 4) so has she
179. Raju would never have taken the job, if ___ what great demands it would make on his time.
 1) he knows 2) he had known 3) he has knowing
 4) he has known
180. I am very fond of the theatre, but on the whole, I prefer serious drama ___ light comedy.
 1) than 2) to 3) for 4) with
181. Your conduct smacks ___ recklessness.
 1) of 2) with 3) from 4) in
182. Children went round the school and ___ all the rubbish.
 1) picked up 2) picked on 3) picked away
 4) picked at
183. He ___ the trivial errors and concentrated on correcting serious mistakes.
 1) passed on 2) passed through
 3) passed over 4) passed away
184. He knew he had been rude, but instead of apologizing he tried to ___
 1) laugh it off 2) laugh an it 3) laugh it away
 4) laugh it over
185. It's getting cold, You ___ your coat.
 1) have better take 2) must have taken
 3) had better take 4) had better taken

PART - 4

Read the following passage and answer questions 186 – 190.

Hummingbirds are small, often brightly coloured birds of the family, Trochilidae that live exclusively in the Americas. About 12 species are found in North America, but only the ruby - throated hummingbird breeds in eastern North America and is found from Nova Scotia to Florida. The greatest variety and number of species are found in South America.

Many hummingbirds are minute. But even the giant hummingbird found in western South America, which is the

largest known hummingbird, is only about 8 inches long and weighs about two-thirds of an ounce. The smallest of the species measures slightly more than 5.5 centimeters and weighs about two grams.

Hummingbirds bodies are compact, with strong muscles. They have wings shaped like blades. Unlike the wings of other birds, hummingbird's wings connect to the body only at the shoulder joint which allows them to fly not only forward but also straight up and down, sideways and backward. The hummingbird's beak adapted for securing nectar from certain types of flowers; is usually rather long and always slender, and is curved slightly downward.

The rate at which a hummingbird beats its wings does not vary, regardless of whether it is flying forward, or merely hovering. But the rate does vary with the size of the bird- the larger the bird, the lower the rate.

186. According to the passage, where are the hummingbirds found?
 1) throughout the world 2) in South America only
 3) in North America only 4) In North and South America
187. The word 'minute' in the second paragraph is closest in meaning to
 1) extremely tiny 2) extremely fast
 3) unique 4) organized
188. How are hummingbirds wings different from those of other birds?
 1) They are stronger 2) They are weaker
 3) They are connected only at the shoulder
 4) They are immobile
189. The rate at which a hummingbird's wings beat is related to
 1) its size 2) the direction of its flight
 3) the height at which it is flying
 4) the species to which it belongs
190. Which of the following is true according to the passage?
 1) Hummingbirds have a straight beak
 2) Large hummingbirds beat their wings faster than the small ones do.
 3) All hummingbirds are minute
 4) Hummingbirds feed on nectar of flowers..

Read the following passage and answer questions 191- 195 :

When I was a child, gentlemen used to raise their hats to female acquaintances on the street and I was taught to mind my Ps and Qs and to give up my seat for my 'elders and betters' on the bus. Now I am grown-up, no one either raises their hat to me or offers me a seat on a crowded bus. It's as if courtesy itself is now a thing of the past! Some might call it prim or starchy to hanker after an old-fashioned code of etiquette, but things must somehow have been pleasanter. When people tried to behave in a gentlemanly or ladylike way. I don't believe that people observed the social graces just because they were anxious about doing the done thing; it was more a matter of being considerate to others and oiling the wheels of social interaction. So, let's stop being offhand with each other and stand on ceremony just a little more.

191. To mind my Ps and Qs means
 1) to know the English alphabet
 2) to make an effort to be polite
 3) to be strict 4) to be careful
192. What have people almost forgotten today?
 1) courtesy 2) kindness 3) tolerance
 4) respect

193. What does the speaker support?
- 1) straight-laced behaviour
 - 2) formal rules of behaviour
 - 3) informal behaviour
 - 4) polite behaviour in a rather formal way
194. What does the term 'the done thing' indicate?
- 1) socially acceptable behaviour
 - 2) to do something
 - 3) to complete a job
 - 4) socially unacceptable behaviour
195. What does 'oiling the wheels of social interaction' mean?
- 1) to make interpersonal relationship easier
 - 2) to smoothen social behaviour
 - 3) to interact formally with one another
 - 4) to oil the wheels of one's transport

Read the following passage and answer questions 196 - 200

Burning coal and oil release carbon dioxide which acts in the atmosphere like a one-way mirror. It allows the sun's rays to pass through easily to the earth's surface but prevents heat emitted by the earth from escaping back into space. This results in increasing the temperature of the earth. A considerable carbon dioxide is absorbed by the oceans and the forests. However, these two reservoirs are unable to cope with all the excess quantities produced by industrial combustion. In addition, logging operations, which cut down vast areas of trees, have diminished the expanse of these natural reservoirs. Meteorologists have predicted that the climate of the world is going to heat up by 3° Celsius in the year 2050 than it is today. Already the polar ice has begun to melt which predicts that sea levels will rise and coastal cities will be flooded. The variable behaviour of the sun is another factor in changing the world climate. There are hot and relatively cold spots on the sun. As the sun rotates on its axis, it presents hotter and colder faces to the earth. This seems to have considerable impact on the earth's atmospheric pressure and wind circulation which in turn affects the sun's energy reaching the earth.

196. What is the theme of the passage?
- 1) carbon emission in the environment
 - 2) environmental degradation
 - 3) natural reservoirs on the earth
 - 4) changes in the world climate
197. Which statement is NOT true according to the passage?
- 1) Fuels pollute the atmosphere by releasing carbon dioxide
 - 2) Sea and forests absorb polluting gases
 - 3) Heat on the earth escapes into the space
 - 4) The sun, like the earth, rotates on its axis
198. There seems to be a relationship between
- 1) forests and oceans and the sun's spots
 - 2) wind patterns and circulation of the sun's energy
 - 3) solar system and the atmospheric pressures
 - 4) the earth and the sun's place in the solar system
199. What will be the impact of the rising temperatures on the seaside areas?
- 1) They will be drowned under the sea
 - 2) They will be very hot and will rise with the sea level
 - 3) They will be polluted because of the carbon dioxide
 - 4) They will become bare and dry
200. What do you understand by 'logging operations'?
- 1) cutting down trees
 - 2) melting of the polar caps
 - 3) emission of carbon dioxide
 - 4) atmospheric changes