Max. Marks: 200 **Total Questions: 200** **Time: $2\frac{1}{2}$ Hours**

SECTION - A

Analytical Ability

Questions: 75 **Marks: 75**

I. Data Sufficiency (Marks : 20)

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:

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 the statements I and II together are sufficient to answer the question but neither statement alone is 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. Are the sets A and B disjoint ?

I. $A \cup B = A \Delta B$ II. $A \cup B = A$

2. Is the integer k, divisible by 12?

I. k is divisible by 3 II. k is divisible by 24

3. Given n is a natural number, is $n(n^2 - 1)$ divisible by 24?

I. n is odd II. n is multiple of 3

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

I. $\frac{a}{b} = 1$ II. $a + b \neq 0$

5. What is the value of a + b + c + d?

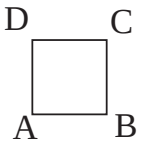
I. $3a + 5b + 7c - 6d = 24$ II. $a - b - 3c + 10d = 16$

6. What is the slope of the straight line?

I. The straight line passes through the origin and the point (3, 2).

II. The straight line passes through (3, 3).

7. Is $\square$ ABCD a square?



I. AB = AD

II. $\angle A = 90°$

8. What is the area of triangle?

I. Its base is 10. II. Its area is half of the area of a square with side 8.

9. Is x positive?

I. $x^2 + 3x - 4 = 0$ II. $x > -2$

10. What is the value of $(x + y + z)^4 - x^4 - y^4 - z^4$?

I. $z = 8$ II. $x = 6, y = -6$

11. Is X an even number?

I. X + Y is even II. X – Y is even.

12. What is the value of $\cos\theta$?

I. $\sin\theta = \frac{4}{5}$ II. $\sec\theta = \frac{5}{3}$

13. What is the sum of the roots of $ax^2 + bx + c = 0$? $(a, b, c \in z)$

I. $a \neq c$ II. $a = b$

14. Is p v q true?

I. p is false II. Atleast one of p and q is true

15. How much is Kumar's salary?

I. Kumar's salary at present is double Arvind's salary last year.

II. Aravind salary is Rs.850.

16. What is the rate of simple interest?

I. The principle doubles itself in 8 years.

II. The principle is Rs.1000

17. What is the speed of train?

I. It crosses a pole in 10 seconds. II. The train is 200 m long.

18. What are the dimensions of a certain rectangle?

I. The perimeter of the rectangle is 14. II. The diagonal of the rectangle is 5.

19. What is the area of the triangle?

I. The triangle is equilateral. II. One of the sides is 6.

20. What is the curved surface area of a cylinder C?

I. The base area is 66. II. The volume is 264.

II. Problem Solving (Marks : 55)

a) Sequence and Series (Marks : 25)

Note: In each of the questions numbered 21 to 35 a sequence of number or letters that follow a definite pattern is given. Each question has a blank space. This had to be filled by the correct answer from the four given options to complete the sequence without breaking the pattern.

21. 0, 6, 24, 60, ..., 210

1) 117 2) 119 3) 120 4) 153

22. 97, 89, 83, 79, 73, ...

1) 69 2) 70 3) 67 4) 71

23. 4, 7, 19, 67, ...1027

1) 108 2) 259 3) 617 4) 148

24. 113, 85, 61, 41, ...13, 5

1) 24 2) 23 3) 25 4) 22

25. 7, 21, 63, 189, ...1701

1) 567 2) 381 3) 498 4) 683

26. $2 + \sqrt{5}$, $9 + 4\sqrt{5}$, ... , $161 + 72\sqrt{5}$

1) $18 + 16\sqrt{5}$ 2) $38 + 17\sqrt{5}$ 3) $64 + 32\sqrt{5}$ 4) $72 + 64\sqrt{5}$

27. ABD, EFH, ..., MNP, QRT

1) GHI 2) IJK 3) IJL 4) JKM

28. CEGK, EGKM, ..., KMQS

1) GJKM 2) GKMQ 3) GLMQ 4) GMQS

29. BDF, DHL, HPX, ..., FLR

1) JFV 2) PGV 3) PFV 4) PFU

30. ....., JIO, TSY, DCI

1) ZYF 2) ZYE 3) XYD 4) ZYG

31. 99 : 120 : : ..... : 63

1) 48 2) 42 3) 36 4) 24

32. 625 : 5 :: 1296 : .....

1) 9 2) 7 3) 6 4) 8

33. ICET : ETCI :: ..... : GATE

1) GTAE 2) EGTA 3) TEGA 4) ETGA

34. HCM : FAK :: SGD : .....

1) QEB 2) QIB 3) ESQ 4) GES

35. Chisel : Sculptor : : Harrow : .....

1) Gardener 2) Mason 3) Blacksmith 4) Guard

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

36. 1) 57 2) 67 3) 77 4) 87

37. 1) 125 2) 216 3) 225 4) 512

38. 1) 841 2) 441 3) 144 4) 343

39. 1) 56 2) 72 3) 94 4) 48

40. 1) 697 2) 957 3) 894 4) 876

41. 1) Krishna 2) Godavari 3) Narmada 4) Mahanadi

42. 1) LUNG 2) EYE 3) HEART 4) EAR

43. 1) CX 2) GT 3) IR 4) KO

44. 1) JLNQ 2) FHKO 3) CEHL 4) NPSW

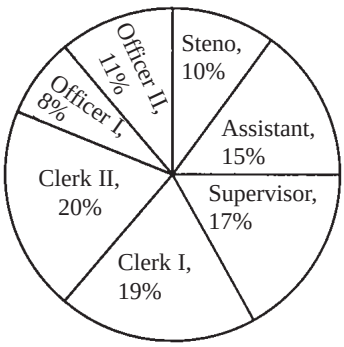
45. 1) PRK 2) IRK 3) EST 4) ALN

(b) Data Analysis **(Marks : 10)**

Directions (46 - 50): Study the following information to answer the given questions:

Percentage of different types of employees in an organisation

Total number of employees = 7000



	Out of these percent of	
	Direct	Promotees
1. Steno	30	70
2. Assistant	40	60
3. Supervisor	50	50
4. Clerk I	90	10
5. Clerk II	30	70
6. Officer I	90	10
7. Officer II	70	30

46. What is the difference in Direct Recruits and Promotee Assistants?

1) 210 2) 280 3) 180 4) 110

47. The Promotee Clerk - I is **approximately** what percent of that of Direct Recruit Clerk - I?

1) 10 2) 9 3) 11 4) 10.50

48. How many employees are Supervisors?

1) 1050 2) 1019 3) 1190 4) 1290

49. How many total Direct Recruits among all types of employees are there?

1) 4000 2) 3885 3) 3000 4) 3115

50. Which type of employees has maximum number of Direct Recruits?

1) Clerk I & Officer I 2) Officer I

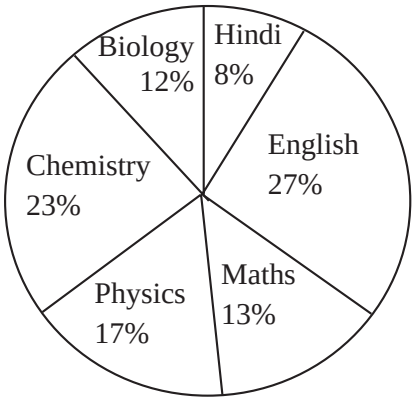
3) Clerk I 4) Clerk II

Directions (51 - 55) Study the following Pie-chart carefully to answer these questions.

Percentage - wise distribution of teachers who teach six different subjects

Total number of teachers = 1800

Percentage of teachers



51. If two-ninth of the teachers who teach Physics are female, then number of male Physics teachers is approximately, what percentage of the total number of teachers who teach Chemistry?

1) 57% 2) 42% 3) 63% 4) 69%

52. What is the total number of teachers teaching Chemistry, English and Biology?

1) 1226 2) 1116 3) 1176 4) 998

53. What is the difference between the total number of teachers, who teach English and Physics together and the total number of teachers who teach Mathematics and Biology together?

1) 352 2) 342 3) 643 4) 653

54. What is the respective ratio of the number of teachers, who teach Mathematics and the number of teachers who teach Hindi?

1) 13 : 8 2) 7 : 13 3) 7 : 26 4) 8 : 15

55. If the percentage of Mathematics teachers is increased by 50% and percentage of Hindi teachers decreased by 25%, then what will be the total number of Mathematics and Hindi teachers together?

1) 390 2) 379 3) 459 4) 480

c) Coding and Decoding Problems: **(Marks: 10)**

Directions (56 - 60): In each of these questions a group of letters is given followed by four combinations of number/ symbol lettered (1), (2), (3) and (4). Letters are to be coded as per the scheme and conditions given below. You have to find out the serial number of the combination, which represents the letter group. Serial number of that combination is your answer.

Letter:	E	Q	B	K	N	P	L	I	T	C	S	F	H	W	A
Digit / Symbol:	5	*	$	2	©	#	4	9	@	6	1	8	%	7	3

Conditions: (i) If the first letter is a consonant and the last a vowel, both are to be coded as the code for the vowel.

(ii) If the first letter is vowel and the last is a consonant, the codes for the two are to be interchanged.

(iii) If both, the first and the last letters are consonants, both are to be coded as 'δ '.

(iv) If there are more than two vowels in the group of letters all vowels are to be coded as ' Ψ '

56. KAWIPL

1) δ37973 2) δ379#δ 3) 4δ7δ#2 4) δ37393

57. IQCPWF

1) 9*6#78 2) 9*6#79 3) *6#73δ 4) 8*6#79

58. TCKAPE

1) @623#@ 2) @623#5 3) 5623#5 4) 5623#@

59. IKBQFA

1) 92$8*3 2) 923$*8 3) 92*83$ 4) 92$*83

60. IBTNAE

1) $9@©3Ψ 2) $@©3ΨΨ 3) Ψ$@39© 4) Ψ$@©ΨΨ

Directions (61 - 65): Observe the following coding pattern and answer these questions based on the same pattern.

For r = 1, 2, 3, ...25, 26 the code for the r^{th} letter is $(3r - 2)^{th}$ letter. For decoding the inverse process is followed.

61. What is the code for the word CURRENCY?

1) GIZZMNGU 2) GIZZMNGV 3) GIZZNGUN 4) GIZZMGNU

62. What is the code for the word DECREASE?

1) JMGZMBCM 2) JMGZMAPM 3) JNGZACNM 4) JMGZMACM

63. How many letters are coded for THEMSELVES?

1) Zero 2) One 3) Two 4) Three

64. Which word is coded as JZNIE?

1) DRINK 2) DREAM 3) DRUNK 4) DRIVE

65. Which word is coded as FMKTHM?

1) TEMPLE 2) TEMPER 3) TENANT 4) TROUSER

(d) Date, Time & Arrangement Problems: **(Marks : 10)**

66. Which will be the first leap year after 2096?

1) 2100 2) 2104 3) 2102 4) 2108

67. The Independence day was celebrated Friday the 15^{th} August 1996. What was the first day of 1996?

1) Wednesday 2) Tuesday 3) Monday 4) Thursday

68. In a clock the angle between the hours and minute hand at 5 hours 10 minutes is...

1) 60° 2) 95° 3) 120° 4) 90°

69. At what time between 7 and 8 O'clock will the hands of clock be opposite to each other?

1) 9 past $5\frac{5}{11}$ 2) 7 past $5\frac{5}{11}$ 3) 7 past $6\frac{6}{11}$ 4) 7 past $10\frac{10}{11}$

70. Five friends P, Q, R, S and T are sitting on a bench. P is sitting next to Q, R is sitting next to S. S is not sitting next with T. T is at the left end of the bench. R is at the second position from right. P sits to the right side of Q. Who are the neighbours of P?

1) Q and S 2) Q and R 3) R and T 4) S and Q

71. If 34 Δ 35 = 15; 55 Δ 86 = 24; 78 Δ 19 = 25; then 27 Δ 20 = ?

1) 15 2) 17 3) 11 4) 23

72. A and B are brothers. F is the son of B. G is the sister of B. A is the father of E then what is the relation of G to E?

1) Uncle 2) Nephew 3) Aunt 4) Sister

73. Nag travels 5 km towards North and then 6 km towards right. Then he travels 8 km towards right and again 10 km towards right. How far is he from the starting point and in which direction?

1) 5 km NorthEast 2) 7 km South

3) 5 km SouthWest 4) 5 km North

74. If $a*b = a^3 + b^3 - 3ab$, then $\frac{(2*1)*(2*1)}{2*1}$ = ?

1) 1 2) 3 3) 9 4) 27

75. If $a*b = a^2 + ab + 3$ then $3*(4*5)$ = ?

1) 12 2) 19 3) 129 4) 60

SECTION - B

MATHEMATICAL ABILITY

Questions: 75 Marks: 75

I. Arithmetical Ability

76. The average age of a board of 10 advisors of a company is the same as it was 3 year back on account of the replacement of one of the older advisors by a younger men. What is the difference between older and younger man?

1) 30 2) 15 3) 13 4) 45

77. The monthly incomes of A and B are in the ratio 4 : 5, their expenses are in the ratio 5 : 6. If A saves Rs.25 per month and B saves Rs.50 per month. What is A's salary?

1) Rs.500 2) Rs.400 3) Rs.600 4) Rs.750

78. The price of a book goes up by 10% per year. After how many years will its price have increased by atleast 45%?

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

79. If one pipe can fill a tank in $1\frac{1}{2}$ hr and another pipe can fill the same tank in 45 min, how long will the two pipes take to fill the tank together?

1) 20 min. 2) 30 min. 3) 25 min. 4) 35 min.

80. If 6 men can do a job in 14 days, how many men would be needed to do the job in 21 days?

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

81. Five tailors A, B, C, D and E stitch 1800 shirts in 90 days working alternatively. Find the minimum possible number of shirts that can be stitched in a single day by working together.

1) 100 2) 20 3) 50 4) 4

82. When A, B and C are employed for a task, A and B together do 70% of the work and B and C together do 50% of the work. Who is most efficient?

1) A 2) B 3) C

4) Can't be determined

83. A man is walking at a speed of 9 kmph. After every 1 kilometre he takes rest for 9 minutes. How much time will he take to cover a distance of 27 km?

1) 6 hr. 2) 6 hrs. 45 min. 3) 6 hrs. 54 min. 4) 6 hrs. 35 min.

84. A sum was put at simple interest at a certain rate for 2 years had it been put at 3% pa higher rate it would have fetched Rs.72 more. Find the sum.

1) Rs.1200 2) Rs.1500 3) Rs.1800 4) Rs.2000

85. How many three digit numbers are divisible by 6 in all?

1) 149 2) 150 3) 151 4) 166

86. The total number of prime numbers which are contained in $(30)^6$ is

1) 16 2) 12 3) 15 4) 18

87. The product of any three consecutive number is divisible by

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

88. From each of the two given numbers half the smaller number is subtracted of the resulting numbers the larger one is three times as large as the smaller. What is the ratio of the two numbers?

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

89. A and B are partners in a business. A contributes $\frac{1}{4}$ th of the capital for 15 months and B received $\frac{2}{3}$ of the profit for how long B's money was used?

1) 6 2) 9 3) 10 4) 12

90. A : B = 2 : 3, B : C = 4 : 5, C : D = 5 : 8 then A : D =

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

91. The diagonal of a parallelogram is 25 cm and the sides are 20 m and 15 m respectively. What is its area?

1) 300 m^2 2) 150 m^2 3) 75 m^2 4) 600 m^2

92. The perimeter of a circle is equal to that of a square. Their areas are in the ratio

1) 11 : 11 2) 11 : 12 3) 13 : 11 4) 14 : 11

93. If a roll of plastic sheet 1000 m long covers 1500 sq.mt. the width of plastic sheet is

1) 1 m 2) 1.5 m 3) 2.5 m 4) 2.75 m

94. The difference between areas of two squares is 225 m^2. The length of the bigger square is 25 m, the length of the smaller square is

1) 20 m 2) 15 m 3) 12 m 4) 10 m

95. The area of a square is 1024 cm^2. What is the respective ratio between the length and the breadth of a rectangle whose length is twice the side of the square and breadth is 12 cm less than the side of the square?

1) 5 : 18 2) 16 : 5 3) 14 : 5 4) 32 : 5

96. A man buys an article at $\frac{3}{4}$ its value and sells it for 20% more than its value. His profit based on the cost is

1) 45% 2) 50% 3) 55% 4) 60%

97. A cloth merchant announces 25% rebate in prices. If one needs to have a rebate of Rs.40, then how many shirts each costing Rs.32, he should purchase?

1) 5 2) 6 3) 7 4) 10

98. A number exceeds its 75% by 125. What is the number?

1) 50 2) 75 3) 125 4) 100

99. The price of an article is cut by 20%. To restore it to the former value, the new price must be increased by

1) 20% 2) 25% 3) $16\frac{2}{3}$ % 4) 24%

100. Two numbers are in the ratio 3 : 7 of their L.C.M is 84 then the greater number is

1) 196 2) 36 3) 28 4) 12

101. A beam 9 m long, 40 cm wide and 20 cm high is made up to iron which weights 50 kg per cubic metre. The weight of the beam is

1) 56 kg 2) 48 kg 3) 36 kg 4) 27 kg

102. A copper sphere of radius 3 cm is melted and drawn into a wire of diameter 0.2 cm. The length of the wire is

1) 9 m 2) 12 m 3) 16 m 4) 36 m

103. The curved surface area of a cylinder is 1000 cm^2 and its diameter is 20 cm. The volume of the cylinder is

1) 5000 cm^3 2) 6000 cm^3 3) 6500 cm^3 4) 6100 cm^3

104. 5 mangoes and 4 oranges costs as much as 3 mangoes and 7 oranges. The ratio of the cost of one mango to that of one orange is

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

105. If the radius of a sphere is increased by 100%. Then the increased in the surface area of the sphere will be

1) 100% 2) 200% 3) 300% 4) 400%

106. If $4(3x - 2y) = 5(2x - y)$ then x : y =

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

107. The value of x if $\frac{15}{x+3} + \frac{2}{x+5} = \frac{4}{x+2} + \frac{12}{x+4}$ & $x \neq -8$ is

1) 1, 6 2) −1, 6 3) 1, −6 4) −1, −6

108. $\frac{1}{\sqrt{2}+\sqrt{3}-\sqrt{5}} + \frac{1}{\sqrt{2}-\sqrt{3}-\sqrt{5}} =$

1) $\frac{1}{\sqrt{2}}$ 2) $\sqrt{2}$ 3) $\frac{1}{2}$ 4) 2

109. $\left(\frac{\sqrt[4]{pq}-\sqrt{q}}{\sqrt{p}-\sqrt[4]{pq}}\right)^{-4}$

1) $-\frac{p}{q}$ 2) $\frac{-q}{p}$ 3) $\frac{p}{q}$ 4) $\frac{q}{p}$

110. $\frac{(0.63)^2 + (0.05)^2 + (0.032)^2}{(0.063)^2 + (0.005)^2 + (0.0032)^2} =$

1) 1 2) 10 3) 100 4) 1000

111. If $y + z = ax$; $z + x = by$; $x + y = cz$ then $\frac{1}{a+1} + \frac{1}{b+1} + \frac{1}{c+1} =$

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

112. $\sqrt{\frac{a}{b} + \frac{b}{a} + 2} =$

1) $\sqrt{\frac{a}{b}} - \sqrt{\frac{b}{a}}$ 2) $\sqrt{\frac{b}{a}} - \sqrt{\frac{a}{b}}$

3) $\sqrt{\frac{a}{b}} + \sqrt{\frac{b}{a}}$ 4) $\frac{1}{a} + \frac{1}{b}$

113. Which of the following is bigger?

1) 3^{3333} 2) 33^{333} 3) 333^{33} 4) 3333^{3}

114. If $x^{x\sqrt{x}} = (x\sqrt{x})^{x}$ then x =

1) $\frac{3}{2}$ 2) $\frac{1}{2}$ 3) $\frac{9}{4}$ 4) 1

115. Number of real solutions of $x^2 + 5|x| + 6 = 0$ is

1) 0 2) 2 3) 3 4) 4

116. If one root of the equation $ax^2 + bx + c = 0$ is double the other root, then

1) $b^2 = 9ac$ 2) $2b^2 = 3ac$ 3) $b = 2a$ 4) $2b^2 = 9ac$

117. The remainder when $x^4 - 2x^3 - 3x^2 + x - 1$ is divided by $(x + 2)$ is

1) 0 2) -15 3) 17 4) 20

118. The coefficient of x^{20} in the expansion of $\left(5x^2 + \frac{2}{x^2}\right)^{10}$ is

1) ${}^{10}c_0$ 2) ${}^{10}c_0.5^{10}$ 3) ${}^{10}c_9 .5^9$ 4) ${}^{10}c_5.5^5$

119. If the 3^{rd} and 7^{th} terms of an arithmetic progression are 8 and 20 respectively, then the 5^{th} term in that progression is

1) 10 2) 12 3) 14 4) 16

120. If $B \subseteq A$ then $B - (A \cap B) =$

1) ϕ 2) $A - B$ 3) B 4) $B - A$

121. Let $A \neq \phi$ then which is the smallest equivalence relation defined on A

1) $A \times A$ 2) I_A 3) ϕ 4) P(A)

122. If $\left[a_{ij}\right]_{2\times 2}$ and $a_{ij} = i^2 - j^2$ then A =

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

123. If $A = \begin{bmatrix}1 & 2\\ 0 & 1\end{bmatrix}$, then A^n =

1) $\begin{bmatrix}1 & n\\ 0 & 1\end{bmatrix}$ 2) $\begin{bmatrix}2 & n\\ 0 & 1\end{bmatrix}$ 3) $\begin{bmatrix}1 & 2n\\ 0 & 1\end{bmatrix}$ 4) $\begin{bmatrix}1 & 2\\ 0 & n\end{bmatrix}$

124. The area of triangle with vertices (0, 0), (2, −3), (4, 5) is

1) 11 sq. units 2) 15 sq. units

3) 20 sq. units 4) 40 sq. units.

125. A line drawn through A (5, 3) makes an angle of 45° with the X-axis at B. Then the distance between the points A and B is

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

126. If p, q are two statements, then $\sim (p \rightarrow q)$ is equivalent to

1) $\sim p \vee q$ 2) $\sim p \wedge q$ 3) $p \vee (\sim q)$ 4) $p \wedge (\sim q)$

127. $\dfrac{\cos 15^\circ - \sin 15^\circ}{\cos 15^\circ + \sin 15^\circ}$ =

1) $\dfrac{\sqrt{3}}{2}$ 2) $2 + \sqrt{3}$ 3) $\sqrt{3}$ 4) $\dfrac{1}{\sqrt{3}}$

128. If $p(\sec\theta - \tan\theta) = (\sec\theta + \tan\theta)\cos^2\theta$, then p = _____

1) $(1 - \cos\theta)^2$ 2) $(1 + \cos\theta)^2$ 3) $(1 - \sin\theta)^2$ 4) $(1 + \sin\theta)^2$

129. The tops of two poles of height 24 mts, 20 mts are connected by a wire. If the wire makes an angle 30° with the horizontal then length of wire is

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

130. The largest 2 digit number that satisfies $2x \equiv 5 \pmod 3$ is _____

1) 99 2) 98 3) 97 4) 96

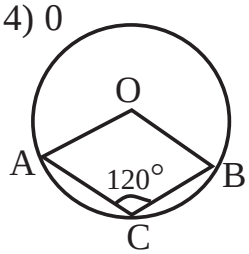
131. The remainder obtained when $5^{11} - 5$ is divided by 11 is ____

1) 4 2) 11 3) 3 4) 0

132. If $\angle ACB = 120^\circ$ then $\angle AOB$ = ___ (Here 'O' is centre)

1) 240° 2) 180°

3) 60° 4) 120°



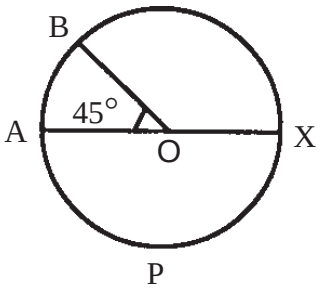
133. If the perimeter of a regular hexagon is 24 cm, then its area in sq. cm. is

1) $12\sqrt{6}$ 2) 18 3) $18\sqrt{3}$ 4) $24\sqrt{3}$

134. Number of direct common tangents to the circles with $r_1 = 5$ cms, $r_2 = 3$ cms and d = 10 cm are

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

135. 'O' is the centre of the circle and $\angle AOB = 45°$, then ratio of the areas of sectors AOB, OBX, APX



1) 1 : 3 : 2 2) 1 : 2 : 3

3) 1 : 4 : 3 4) 1 : 3 : 4

136. $\lim_{x \to \infty} \frac{x(x+1)(2x+3)}{x^3} =$

1) 1 2) 2 3) 0 4) 3

137. $\lim_{x \to 0} \frac{\sqrt{4+x} - \sqrt{4-x}}{x} =$

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

138. $\frac{d}{dx}(\log_x 10) =$

1) 0 2) $\frac{-\log 10}{x(\log x)^2}$ 3) $\frac{-\log 10}{(\log x)^2}$ 4) $\frac{x}{\log 10}$

139. If $f(x) = \frac{1}{\sqrt{x}}$ then f'(x) at x = 4 is

1) $\frac{-1}{16}$ 2) $\frac{-1}{8}$ 3) $\frac{-1}{4}$ 4) $\frac{1}{8}$

140. If $y = 3x^2 + 8\sin x + \log x$ then $\frac{dy}{dx} =$

1) $2x + \tan x + \frac{1}{x}$ 2) $6x - \cos x + \frac{1}{x}$

3) $6x + 8\cos x + \frac{1}{x}$ 4) $6x + \sin x + \frac{1}{x}$

141. A frequency distribution contains 8 classes, width of each class is 10. If the lower bound of the first class is 15, then the lower bound of the 7^{th} class is ....

1) 80 2) 82 3) 94 4) 75

142. Mean Deviation about median of first five prime numbers is....

1) 5 2) 2.5 3) 2.6 4) 1.25

143. If $\sum_{i=1}^{n} (x_i - k) = 0$ then k = ...

1) Median 2) Mean 3) Mode 4) Harmonic Mean

144. The mean mark of boy in a particular subject was 79 and that of girl was 73. The average mark of all the students was 75 then the ratio of boy to girl is

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

145. If the standard deviation of n consecutive positive integers is $2\sqrt{13}$ then n = ...

1) 25 2) 35 3) 15 4) 7

146. If P(A) = 0.3 , P(B) = 0.6 , P(A $\cap$ B) = 0.2 then P($\overline{A} \cap \overline{B}$) =

1) 0.7 2) 0.5 3) 0.4 4) 0.3

147. A card is drawn from a well shuffled pack of cards. What is the probability that it is either diamond or spade?

1) $\frac{7}{13}$ 2) $\frac{4}{7}$ 3) $\frac{2}{3}$ 4) $\frac{1}{2}$

148. 8 coins are tossed simultaneously. The probability of getting at least six heads is

1) $\frac{39}{256}$ 2) $\frac{29}{256}$ 3) $\frac{31}{256}$ 4) $\frac{37}{256}$

149. The probability that a leap year will have exactly 52 fridays is

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

150. In a family of 6 children, the probability that the family to have 3 boys is

1) $\frac{5}{16}$ 2) $\frac{7}{16}$ 3) $\frac{1}{2}$ 4) $\frac{1}{8}$

SECTION - C

Communication Ability

Questions: 50 **Marks: 50**

PART - 1

Choose the correct answer:

151. Which of the following is the correct order of the four major functions of a computer?

1) Process $\rightarrow$ Output $\rightarrow$ Input $\rightarrow$ Storage

2) Input $\rightarrow$ Output $\rightarrow$ Process $\rightarrow$ Storage

3) Process $\rightarrow$ Storage $\rightarrow$ Input $\rightarrow$ Output

4) Input $\rightarrow$ Process $\rightarrow$ Output $\rightarrow$ Storage

152. A byte can hold one ..... of data.

1) bit 2) binary digit 3) character 4) kilobyte

153. Auxiliary memory is also called

1) Primary Memory 2) Third Memory

3) Extra Memory 4) Secondary Memory

154. Which of the following is a universal gate?

1) AND 2) NOR 3) Buffer 4) Inverter

155. The scrambling of code is known as

1) encryption 2) a firewall

3) scrambling 4) password-proofing

156. NCD stands for

1) Non Convertible Demand 2) Non Convertible Display

3) Non Convertible Debenture 4) Non Convertible Discount

157. Bulls come in the case of

1) Regular Market 2) Stock Market

3) Hyper Market 4) Money Market

158. Commercial paper comes under

1) Capital Market 2) FOREX Market

3) STOCK Market 4) Money Market

159. NAV is applicable to

1) Mutual Funds 2) Share Market

3) Gold Market 4) Forward Market

160. Coupon Rate means

1) Int. Rate on Bank Deposit 2) Int. Rate on Loan given by RBI

3) Int. Rate on Govt. Bonds 4) Int. Rate on Equity Shares

PART - 2

Choose the correct meaning for the word given:

161. Insane

1) mad 2) save 3) sot 4) dot

162. Masticate

1) chew 2) repair bones 3) beat 4) revive

163. Confiscate

1) seize 2) punish 3) impeach 4) sue

164. Pensive

1) large 2) sorrowful 3) confident 4) affectionate

165. Dredge

1) press 2) clear away 3) bring down 4) raise

Fill in the blank choosing the correct word:

166. He tends to worry over ..... fears.

1) imaginative 2) imaginary

3) immature 4) incorrigible

167. Prof. Nayak's laudable scientific achievements and his blind belief in astrology are .....

1) incomparable 2) incompatible

3) invincible 4) inappropriate

168. The policy of the government on improving the quality of higher education without jettisoning the system of reservation in college admissions is a .....

1) confusion 2) confabulation

3) conflict 4) conundrum

169. Hari and Rajesh are ..... unable to complete the task.

1) neither 2) either 3) each 4) both

170. The guru advised the householders to seek ..... from time to time for intense spiritual practice.

1) solidarity 2) soliloquy 3) solution 4) solitude

PART - 3

Choose the correct answer:

171. 'He might win'. The speaker is

1) expressing doubt 2) expressing a wish

3) expressing permission 4) an expression showing anxiety

172. She knows the news, ...

1) doesn't she? 2) didn't she? 3) hasn't she? 4) isn't she?

173. Scarcely had he called me ..... I went in.

1) than 2) then 3) when 4) that

174. You are able to secure a rank. How would you express it?

1) I shall secure a rank. 2) I may secure a rank.

3) I will secure a rank. 4) I can secure a rank.

175. 'He walks as if he was drunk'. Here he is .....

1) not drunk 2) drunk

3) either (1) or (2) 4) neither (1) nor (2)

Fill in the blank with appropriate Phrase/ Verb/ Preposition:

176. The hard labour is telling ..... their health.

1) about 2) at 3) with 4) upon

177. Kumari dissuaded me ..... joining them.

1) from 2) at 3) to 4) with

178. The teacher said, 'Be quiet, boys.' (Rewrite it)

1) The teacher said that the boys should be quiet.

2) The teacher called the boys and ordered them to be quiet.

3) The teacher urged the boys to be quiet.

4) The teacher commanded the boys that they be quiet.

179. The organizers have ..... the programme.

1) put off 2) put out 3) put down 4) put on

180. Maneesha is good ..... English.

1) at 2) in 3) about 4) for

181. The ministers were practising corrupt affairs. (The passive form of the sentence is)

1) Corrupt affairs were practised by the ministers.

2) Corrupt affairs were being practised by the ministers.

3) Corrupt affairs had been practised by ministers.

4) Corrupt affairs had been practised by the ministers.

182. Don't ..... quarrel with other over trifles.

1) pick up 2) pick out

3) pick on 4) pick down

183. At this time yesterday we ..... cricket.

1) played 2) are playing

3) were playing 4) had been playing

184. Somesh was disgusted ..... their attitudes.

1) at 2) by 3) with 4) about

185. My sister ..... unwell since Tuesday.

1) is 2) being

3) was 4) has been

PART - 4

Read the following passage and answer the questions (186-190):

Marie Sklodowska Curie (1867-1934) was born in Warsaw, Poland. As a student, she participated in the student's revolutionary organization which was fighting against the dictatorial regime in Poland. She was forced to leave Poland for Paris because of her involvement in such activities. In 1903 she shared with her husband Pierre Curie and another scientist Henri Becquerel, the Nobel Prize in Physics for the discovery of radioactivity. Later in 1911, she received the Nobel Prize in Chemistry for the discovery and isolation of radium. She was the first person to win two Nobel Prizes. She and her husband discovered Polonium. This element was named in honour of her motherland, Poland.

Marie and her daughter Irene Joliot Curie died of radiation-included illness. These two women risked their lives for the sake of advancement of science, which now greatly benefits the society. Irene and her husband Frederick Joliot-Curie shared the Nobel Prize in Chemistry in 1935. The Curies thus created a record by four family members having received the Nobel Prize.

Despite her spectacular contribution to science, Marie's nomination to the French Academy of Sciences in 1911 was rejected by one vote because she was a woman!

186. Marie Curie won the Nobel Prize in Chemistry for .....

1) discovery of radioactivity
2) discovery and isolation of radium
3) discovery of X-ray
4) laws of Radioactive Decay

187. Frederick Joliot-Curie was Marie Curie's .....

1) husband
2) brother
3) son
4) son-in-law

188. In what way did Marie Curie and her daughter risk their lives for the advancement of science?

1) They defied the dictators of Poland and France.
2) They discovered Polonium which had great side effects.
3) They exposed themselves to radium and died of radium-induced illness.
4) They joined terrorist organizations.

189. Which of the following is true?

1) Polonium was named after Marie Curie's motherland.
2) Polonium was Henri Becquerel's contribution to Science.
3) The discovery of polonium helped Marie Curie get nominated to the French Academy of Sciences.
4) Marie won the Nobel Prize for the discovery of polonium in 1935.

190. Marie Curie's nomination to the French Academy of Sciences in 1911 was rejected by one vote because .....

1) she had already won the Nobel Prize

2) she had won two Nobel Prizes

3) she was a woman 4) she was Polish

Read the following passages and answer the questions (191-195):

Just as some men like to play football or cricket, so some men like to climb mountains. This is often very difficult to do, for mountains are not just big hills, paths are usually very steep. Some mountain sides are straight up and down, so that it may take many hours to climb as little as one hundred feet. There is always the danger that you may fall off and be killed or injured. Men talk about conquering a mountain. It is a wonderful feeling to reach the top of a mountain after climbing for hours and may be, even days. You look down and see the whole country below you. You feel god-like. Two Italian prisoners of war escaped from a prison camp in Kenya during the war. They did not try to get back to their own country, for they knew that was impossible. Instead, they climbed to the top of Mount Kenya, and then they came down again and gave themselves up. They had wanted to get that feeling of freedom that one has, after climbing a difficult mountain.

191. Some men like to climb mountains because

1) they do not like to play football or cricket.

2) they want to have a wonderful feeling.

3) they know the trick of climbing.

4) they like to face danger.

192. To climb mountains is often difficult because

1) mountains are big hills. 2) it consumes more time.

3) prisoners often escape from camps and settle there.

4) paths are steep and uneven.

193. It is a wonderful feeling ..... 'It' refers to .....

1) the steep path. 2) the mountain

3) the prisoner 4) mountaineering

194. Two Italian prisoners escaped from the camp and climbed on the top of Mount Kenya

1) to get the feeling of freedom. 2) to escape to Italy.

3) to gain fame as mountaineers. 4) to get a reward.

195. Mountaineering is not a very popular sport like football or cricket because

1) it may take many hours or days.

2) there are no spectators in this sport.

3) people do not want to enjoy a god-like feeling.

4) it may take a few hours or days.

Read the following passage and answer the questions (196-200):

To avoid the various foolish opinions to which mankind is prone, no superhuman brain is required. A few simple rules will keep you free, not from all errors, but from silly errors. If the matter is one that can be settled by observation, make the observation yourself. Aristotle could have avoided the mistake of thinking that women have fewer teeth than men, by the simple device of asking Mrs. Aristotle to keep her mouth open while he counted. Thinking that you know when, in fact, you do not is a bad mistake, to which we are all prone. I believe myself that hedgehogs eat black beetles, because I have been told that they do; but if I was writing a book on the habits of hedgehogs, I should not commit myself until I had seen one enjoying this diet. Aristotle, however, was less cautious. Ancient and medieval writers knew all about ancient unicorns and salamanders; not one of them thought it necessary to avoid dogmatic statements about them because he had never seen one of them.

196. The author portrays mankind as

1) very intelligent 2) having superhuman qualities

3) nervous and weak 4) lazy and ignorant

197. The author is in favour of drawing conclusions on the basis of

1) reasoning 2) study of eminent thinkers

3) empirical evidence 4) discussion and consultation

198. According to the author, unicorns and salamanders

1) existed in the past but now have become extinct

2) are invisible 3) never really existed

4) have caused strange stories to be written about them

199. The author implies that

1) hedgehogs eat black beetles

2) hedgehogs do not really eat black beetles

3) he is writing a book about hedgehogs

4) he has never seen a hedgehog eating beetles

200. The attitude of the author is

1) philosophic 2) scientific 3) cultural 4) sensible

Key

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