

Instructions:-

1. There will be **two** main questions..
2. Main question wise choice is available.
3. You may answer randomly but every main question attempted should be answered serially/alphabetically.
4. Figures to the right indicate full marks.

Q.I Attempt **ANY FIVE** questions from the following: (2x5=10)

- 1) Find the sum of $7 + 12 + 17 + 22 + \dots$ to 20 terms.
- 2) Find the n^{th} term of $3, \frac{-3}{2}, \frac{3}{2}, \frac{-3}{8}, \dots$
- 3) Translate symbolically "I will attend lectures or study in the Library" (x, y) .
- 4) Are the two propositions $P(p, q) = p \rightarrow q$ and $Q(p, q) = \sim p \vee q$ logically equivalent? Justify.
- 5) If for an A.P., $T_8 = 36$, find S_{11}
- 6) Find T_5 and T_n for the A.P. 27, 22, 17, 12,
- 7) If for a G.P., $S_2 = 8$ and $S_4 = 80$, find the common ratio.
- 8) Find the complement of union between the two sets given below.
A= Set of all positive integers and
B= Set of all even positive integers

QII. Attempt **ANY SIX** of the following (5x6=30)

- 1) Construct the truth table for $p \wedge \sim(p \vee q)$ and comment on your finding..
- 2) Out of the total number of 200 students appearing in an examination, 140 passed in Maths and 100 passed in Statistics. If 40 of them failed in both maths and statistics, find the percentage of students who have passed in both.
- 3) A sum amounting to 5115 is to be repaid in 10 monthly instalments, so that each instalment is double the previous instalment. Find the value of the first and the last instalment.
- 4) Translate symbolically "If I am hungry or tired, Then I cannot study". (p, q, r) .

- 5) If $A = \{1, 2, 3, 4\}$, $B = \{2, 4, 5, 6\}$ & $C = \{3, 4, 5, 7\}$ and $S = \{1, 2, 3, 4, 5, 6, 7\}$ is the universal set. Find A' and $(B \cup C)'$. Also verify that $(B \cap C)' = B' \cup C'$.
- 6) A man saved Rs. 16,500/- in ten years. In each year after the first, he saved Rs. 100/- more than in the preceding year. How much did he save in the first year?
- 7) Find the sum $7 + 77 + 777 + \dots$ to n terms.
- 8) If $A = \{x/6x^2 + x - 15 = 0\}$, $B = \{x/2x^2 - 5x + 3 = 0\}$ and $C = \{x/2x^2 + x - 3 = 0\}$,
find i) $(A \cup B \cup C)$
ii) $(A \cap B \cap C)$

-----XXXXXXXXXX-----