

**2308000601060017**  
**EXAMINATION FEBRUARY-MARCH 2024**  
**BACHELOR OF COMMERCE (FIRST SEMESTER)**  
**(NEP & NON NEP)**  
**SEC - MATHEMATICS FOR DATA SCIENCE - LEVEL 6**

[Time: As Per Schedule]

[Max. Marks: 25]

**Instructions:**

**1. Fill up strictly the following details on your answer book**

- a. Name of the Examination: **BACHELOR OF COMMERCE (FIRST SEMESTER) (NEP & NON NEP)**
  - b. Name of the Subject: **SEC- MATHEMATICS FOR DATA SCIENCE – LEVEL 6**
  - c. Subject Code No: **2308000601060017**
2. Figures to the right side indicate full marks of the questions.  
3. Graph papers and statistical tables would be supplied on request.  
4. Non-scientific calculator can be used.

Seat No:

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Student's Signature

**Q.1 Answer the following questions. (Any Five)**

**5**

- 1) Solve the equation:  $\frac{5x}{2} + 3 = \frac{21}{2}$
- 2) What is equation?
- 3) Define: Universal Set.
- 4) Define: Statement
- 5) Find how many four-letter words can be formed out of the word LOGARITHMS.
- 6) If  $A = \{3, 5\}$  then find  $A^2$
- 7) Give the negations of  $4+6=10$  and  $3 \times 6 = 18$  using De Morgan's law.
- 8) Evaluate:  ${}^{15}P_3 + 55$

**Q.2(A)** For the following market model find equilibrium price and supply. **5**

$$D = 8 - 2P$$

$$S = -4 + 4P \text{ (where } D = \text{Demand, } S = \text{supply, } P = \text{Price)}$$

**Q.2(B)** Using truth table Prove that:  $p \vee (q \wedge r) = (p \vee q) \wedge (p \vee r)$  **5**

**OR**

**Q.2(A)** Out of ten consonants and four vowels, how many words can be formed each containing six consonants and three vowels? **5**

**Q.2(B)** If  $A = \{1, 4\}$ ,  $B = \{4, 5\}$  and  $C = \{4, 5, 6\}$  then prove  $A \times (B \cup C) = (A \times B) \cup (A \times C)$  **5**

**Q.3** Answer the following questions. (Any Two) **10**

1) solve the following equation by using method of Cross multiplication:

$$X - 3Y + 7 = 0$$

$$4X + Y - 11 = 0$$

2) If the Universal Set  $U = \{x/x \text{ is a positive integer } < 25\}$ ,  $A = \{2, 6, 8, 14, 22\}$ ,

$B = \{4, 8, 10, 14\}$ ,  $C = \{6, 10, 12, 14, 18, 20\}$  then verify the relations.

(i)  $(A \cap B)' = A' \cup B'$

(ii)  $(B' \cap C) \cup (A' \cap C) = C \cap (A' \cup B')$

3) If  ${}^n P_4 = 12 \times {}^n P_2$  then find n.

4) Prove the following De-Morgan's Law using truth table:

$$\sim(p \vee q) = (\sim p) \wedge (\sim q)$$

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