



65123

## I Semester B.C.A. Degree Examination, March/April 2022

(CBCS)

## COMPUTER SCIENCE

## Discrete Mathematics

Time : 3 Hours

Max. Marks : 100

**Instruction** : Answer **all** Sections.

## SECTION – A

I. Answer **any ten** of the following. **Each** question carries **2** marks. **(10×2=20)**

- 1) If  $A = \{1, 2, 3\}$ ,  $B = \{3, 4, 5\}$ ,  $C = \{0, 2, 3\}$ . Find  $(A \cap B) \times C$ .
- 2) Define finite set with an example.
- 3) Define contradiction.
- 4) Write the truth table for  $p \vee \sim q$ .
- 5) Define permutation.
- 6) Define an abelian group.
- 7) Find the characteristic roots of the matrix  $A = \begin{bmatrix} 1 & 2 \\ 3 & 2 \end{bmatrix}$ .
- 8) On the set of all rational numbers  $Q$ , ' $*$ ' is defined as  $a * b = a + b + ab$ , check whether ' $*$ ' is associative or not.
- 9) If  $\vec{a} = \hat{i} - \hat{j} + 2\hat{k}$  and  $\vec{b} = 2\hat{i} + 3\hat{j} - 4\hat{k}$ . Find  $\vec{a} \times \vec{b}$ .
- 10) Find the midpoint of line joining  $A(-2, 8)$  and  $B(1, -2)$ .
- 11) Find the slope of the straight line  $4x - 3y + 2 = 0$ .
- 12) Prove that  $\log_b a \cdot \log_c b \cdot \log_a c = 1$ .



P.T.O.