

# Relations and Functions

## Part - 3

### ASSERTION-REASON QUESTIONS

*In the following questions, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct answer out of the following choices.*

- (a) Both A and R are true and R is the correct explanation of A.
- (b) Both A and R are true but R is not the correct explanation of A.
- (c) A is true but R is false.
- (d) A is false and R is also false.

1. **Assertion (A) :** Let  $L$  be the collection of all lines in a plane and  $R_1$  be the relation on  $L$  as  $R_1 = \{(L_1, L_2) : L_1 \perp L_2\}$  is a symmetric relation.

**Reason (R) :** A relation  $R$  is said to be symmetric if  $(a, b) \in R \Rightarrow (b, a) \in R$ .

2. **Assertion (A) :** Let  $R$  be the relation on the set of integers  $Z$  given by  $R = \{(a, b) : 2 \text{ divides } (a - b)\}$  is an equivalence relation.

**Reason (R) :** A relation  $R$  in a set  $A$  is said to be an equivalence relation if  $R$  is reflexive, symmetric and transitive.

3. **Assertion (A) :** Let  $f : \mathbb{R} \rightarrow \mathbb{R}$  given by  $f(x) = x$ , then  $f$  is a one-one function.

**Reason (R) :** A function  $g : A \rightarrow B$  is said to be onto function if for each  $b \in B, \exists a \in A$  such that  $g(a) = b$ .

4. **Assertion (A) :** Let function  $f : \{1, 2, 3\} \rightarrow \{1, 2, 3\}$  be an onto function. Then it must be one-one function.

**Reason (R) :** A one-one function  $g : A \rightarrow B$ , where  $A$  and  $B$  are finite set and having same number of elements, then it must be onto and vice-versa.

### Answers

1. (a)                      2. (a)                      3. (b)                      4. (a)