

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)