LAKSHYA (JEE)

Relations and Functions

DPP-02

1. Let R_1 and R_2 be equivalence relations on a set A, then $R_1 \cup R_2$ may or may not be
(A) Reflexive (B) Symmetric
(C) Transitive (D) None of these

2. Let A = {a, b, c} and R = {(a, a), (b, b), (c, c), (b, c), (a, b)} be a relation on A, then R is
(A) Symmetric (B) Transitive
(C) Reflexive (D) None of these

3. Let A = {1, 2, 3} and R = {(1, 1), (2, 2), (1, 2), (2, 1), (1, 3)} then R is
(A) Symmetric (B) Transitive
(C) Reflexive (D) None of these

4. Let A = {1, 2, 3}. Which of the following is not an equivalence relation on A?
(A) {(1, 1), (2, 2), (3, 3)}
(B) {(1, 1), (2, 2), (3, 3), (1, 2), (2, 1)}
(C) {(1, 1), (2, 2), (3, 3), (2, 3), (3, 2)
(D) {(1, 1), (2, 2), (2, 3)}

5. Consider the set A = {3, 4, 5} and the numbers of null relations, identity relationn universal relations, reflexive relations on A are respectively n_1, n_2, n_3 and n_4 then the value of $n_1 + n_2 + n_3 + n_4$ is equal to
(A) 8 (B) 7
(C) 73 (D) 67

6. Let L be the set of all straight line in a plane. l_1 and l_2 are two lines in the set. R_1, R_2 and R_3 are defined relations.
(i) $l_1 R_1 l_2$: l_1 is parallel to l_2
(ii) $l_1 R_2 l_2$: l_1 is perpendicular to l_2
(iii) $l_1 R_3 l_2$: l_1 is intesects l_2
Then which of the following is true?
(A) R_1, R_2 and R_3 are equivalence
(B) R_1 is equivalence
(C) R_2 and R_3 are reflexive
(D) R_1, R_2 and R_3 are not symmetric

7. Let R be a relation on A = {a, b, c} such that. R = {(a, a), (b, b), (c, c)}, then R is
(A) Reflexive only (B) Symmetric only
(C) Non-transitive (D) Equivalence

8. Let R be the relation on the set of all real numbers defined by xRy iff $|x - y| \le \frac{1}{2}$. Then R is
(A) Reflexive only
(B) Symmetric only
(C) Transitive only
(D) Reflexive and symmetric both

9. Let R = {(1, 2), (2, 3)} be a relation defined on set {1, 2, 3}. The minimum number of ordered pairs required to be added in R, such that enlarged relation becomes an equivalence relation is
(A) 3 (B) 5
(C) 7 (D) 9

10. Let S be the set of all real numbers. Then, the relation R = {(a, b) : 1 + ab > 0} on S is
(A) Reflexive and symmetric but not transitive
(B) Reflexive and transitive but not symmetric
(C) Symmetric and transitive but not reflexive
(D) Reflexive, symmetric and transitive

11. Let A = {1, 2, 3, 4, 5} and let B = A × A. Define the relation R on A as follows (a, b) R (c, d) if and only if ad = cb. Then R is
(A) Reflexive only (B) Symmetric only
(C) Transitive only (D) Equivalence

12. For real numbers x and y, define a relation R, xRy if and only if $x - y + \sqrt{2}$ is an irrational number, then the relation R is
(A) Reflexive (B) Symmetric
(C) Transitive (D) Equivalence

ANSWERS

1. (C)
2. (C)
3. (D)
4. (D)
5. (D)
6. (B)
7. (D)
8. (D)
9. (C)
10. (A)
11. (D)
12. (A)

Note - If you have any query/issue

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