UDAYA Maths

Solution

SLIP TEST – 1

Lesson : 1

Portion : 1.1-1.2 ***Marks : 50***

Std : 11 ***Time : 1.30 hr***

I. Choose the correct answer 10x1 =10

1. $A \Delta B$ =_______
   a) (A-B)∩(B-A) c) (A-B)∪(B-A)
   b) (A-B)≠(B-A) d) (A-B)=(B-A)
2. If W-is a set of all whole numbers, then n(A)=___
   a) 0 b) 1 c) { } d) ∞
3. n[{φ}] =___
   a) 1 b) 0 c) { } d) ∞
4. A∪(A∩B)
   a) A b) B c) { } d) A∪B
5. If A × B = B × A,
   a) A = B b) A = -B c) A ≠ B d) A≠-B
6. If n(AxB) = ___
   a) n(A-B) b) n(A) x n(B) c) n(B-A) d) n(A)
7. Let A and B be two non-Empty sets. The relation from A to B is a subset of ___
   a) A∪B b) A∩B c) A-B d) AxB
8. The relation ρ defined on Z by aρb ↔ ab is odd, then the relation is ____

a) Reflexive but not symmetric

b) symmetric but not Reflexive

c) Reflexive and symmetric

d) Neither Reflexive nor symmetric

9. Let A={blood,sky} B={red,blue,green}. Define a relation ρ from A to B as aρb ↔ the colour of a is b, then ρ is___

a) {(blood, blue),(blood,red)}

b) {(blood, red),(sky, blue)}

c) {(red, blood),(blue, sky)}

d) {(blood, red),(blood, blue),(blood, green)}

10. Let S be a finite set with n elements, The number of elements in the largest equivalence relation on S is___

a) n b) n^2 c) 2n d) 3n

II. Answer any five of the following Questions 5x2 = 10

Question Number 16 is comulsary

11. Find the number of subsets of A if $A = \{x : x = 4n + 1, 2 \leq n \leq 5, n \in N\}$.
12. Two sets have *m* and *k* elements. If the total number of subsets of the first set is 112
    more than that of the second set, find the values of *m* and *k*..
13. If $P(A)$ denotes the power set of A, then find $n(P(P(P(\emptyset))))$.
14. If $n(A \cap B) = 3$ and $n(A \cup B) = 10$, then find $n(P(A \Delta B))$.
15. For a set A, $A \times A$ contains 16 elements and two of its elements are (1, 3) and (0, 2). Find the elements of A.
16. Justify the trueness of the statement:
    "An element of a set can never be a subset of itself."

III. Answer any five of the following Questions 5x3 = 15

Question Number 22 is comulsary

17. Prove that $((A \cup B' \cup C) \cap (A \cap B' \cap C')) \cup ((A \cup B \cup C') \cap (B' \cap C')) = B' \cap C'$
18. If X = {1, 2, 3, . . . 10} and A = {1, 2, 3, 4, 5}, find the number of sets $B \subseteq X$ such that $A - B = \{4\}$.
19. By taking suitable sets *A*,*B*,*C*, verify $(A \times B) \cap (B \times A) = (A \cap B) \times (B \cap A)$.

20. Let A and B be two sets such that $n(A) = 3$ and $n(B) = 2$. If $(x, 1), (y, 2), (z, 1)$ are in $A \times B$, find A and B, where x, y, z are distinct elements.
21. Prove that , If A,B,C are three sets such that $A \subseteq B$ and $B \subseteq C$, then $A \subseteq C$.
22. In the set Z of integers, define mRn if $m - n$ is divisible by 7. Prove that R is an equivalence relation.

IV. Answer any three of the following Questions 3x5 = 15

Question Number 27 is comulsary

1. In a survey of 5000 persons in a town, it was found that 45% of the persons know Language A, 25% know Language B, 10% know Language C, 5% know Languages A and B, 4% know Languages B and C, and 4% know Languages A and C. If 3% of the persons know all the three Languages, find the number of persons who knows only Language A.
2. If A and B are two sets so that $n(B - A) = 2n(A - B) = 4n(A \cap B)$ and if $n(A \cup B) = 14$, then find $n(P(A))$.
3. If $A \times A$ has 16 elements, $S = \{(a, b) \in A \times A : a < b\}$; $(-1, 2)$ and $(0, 1)$ are two elements of S, then find the remaining elements of S.
4. On the set of natural numbers let R be the relation defined by aRb if $a + b \leq 6$. Write down the relation by listing all the pairs. Check whether it is
   (i) reflexive (iii) transitive
   (ii) symmetric (iv) equivalence.
5. In the set Z of integers, define mRn if $m - n$ is divisible by 7. Prove that R is an equivalence relation.
6. On the set of natural numbers let R be the relation defined by aRb if $2a + 3b = 30$. Write down the relation by listing all the pairs. Check whether it is
   (i) reflexive (iii) transitive
   (ii) symmetric (iv) equivalence

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