DPP
DAILY PRACTICE PROBLEMS

Class : XIth **Subject : MATHS**
Date : **DPP No. :5**

Topic :-SETS

1. In a certain town 25% families own a cell phone, 15% families own a scooter and 65% families own neither a cell phone nor a scooter. If 1500 families own both a cell phone and a scooter, then the total number of families in the town is

a) 10000 b) 20000 c) 30000 d) 40000

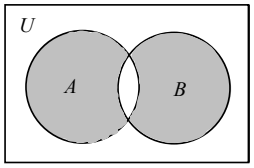
2. If A,B and C are three non-empty sets such that any two of them are disjoint, then $(A \cup B \cup C) \cap (A \cap B \cap C) =$

a) A b) B c) C d) ϕ

3. If $R = \{(a,b): a + b = 4\}$ is a relation on N, then R is

a) Reflexive b) Symmetric c) Antisymmetric d) Transitive

4. The shaded region in the figure represents



a) $A \cap B$ b) $A \cup B$ c) $B - A$ d) $(A - B) \cup (B - A)$

5. Let $X = \{1, 2, 3, 4, 5\}$ and $Y = \{1, 3, 5, 7, 9\}$. Which of the following is/are not relations from $X$to Y?

a) $R_1 = \{(x,y) | y = 2 + x, x \in X, y \in Y\}$

b) $R_2 = \{(1,1),(2,1),(3,3),(4,3),(5,5)\}$

c) $R_3 = \{(1,1),(1,3),(3,5),(3,7),(5,7)\}$

d) $R_4 = \{(1,3),(2,5),(2,4),(7,9)\}$

6. Given the relation $R = \{(1,2),(2,3)\}$ on the set $A = \{1,2,3\}$, the minimum number of ordered pairs which when added to R make it an equivalence relation is

a) 5 b) 6 c) 7 d) 8

7. If sets A and B are defined as

$A = \left\{(x, y): y = \frac{1}{x}, 0 \neq x \in R\right\}$,

$B = \{(x, y): y = -x, x \in R\}$, then

a) $A \cap B = A$ b) $A \cap B = B$ c) $A \cap B = \phi$ d) None of these

8. Let R be an equivalence relation on a finite set A having n elements. Then, the number of ordered pairs in R is

a) Less than n

b) Greater than or equal to n

c) Less than or equal to n

d) None of these

9. If $A_1 \subset A_2 \subset A_3 \subset \ldots \subset A_{50}$ and $n(A_i) = i - 1$, then $n\left(\bigcap_{i=11}^{50} A_i\right) =$

a) 49 b) 50 c) 11 d) 10

10. If $a\ N = \{a\ x : x \in N\}$ and $b\ N \cap c\ N = d\ N$, where $b,c \in N$ then

a) $d = bc$ b) $c = bd$ c) $b = cd$ d) None of these

11. X is the set of all residents in a colony and R is a relation defined on X as follows:
"Two persons are related iff they speak the same language"
The relation R is

a) Only symmetric
b) Only reflexive
c) Both symmetric and reflexive but not transitive
d) Equivalence

12. If S is a set with 10 elements and $A = \{(x, y) : x, y \in S, x \neq y\}$, then the number of elements in A is

a) 100 b) 90 c) 50 d) 45

13. Let $A = \{\text{ONGC, BHEL, SAIL, GAIL, IOCL}\}$ and R be a relation defined as "two elements of A are related if they share exactly one letter". The relation R is

a) Anti-symmetric b) Only transitive c) Only symmetric d) Equivalence

14. The finite sets A and B have m and n elements respectively. if the total number of subsets of A is 112 more than the total number of subsets of B, then the volume of m is

a) 7 b) 9 c) 10 d) 12

15. Let $R = \{(a,a)\}$ be a relation on a set A.Then, R is

a) Symmetric
b) Antisymmetric
c) Symmetric and antisymmetric
d) Neither symmetric nor antisymmetric

16. If $A = \{p : p = \frac{(n+2)(2n^5 + 3n^4 + 4n^3 + 5n^2 + 6)}{n^2 + 2n}, n,p \in Z^+\}$ then the number of elements in the set A, is

a) 2 b) 3 c) 4 d) 6

17. If $A = \{x : x \text{ is a multiple of } 3\}$ and,
$B = \{x : x \text{ is a multiple of } 5\}$, then $A - B$ is

a) $\overline{A} \cap B$ b) $A \cap \overline{B}$ c) $\overline{A} \cap \overline{B}$ d) $\overline{A \cap B}$

18. An investigator interviewed 100 students to determine the performance of three drinks milk, coffee and tea. The investigator reported that 10 students take all three drinks milk, coffee and tea; 20 students take milk and coffee, 30 students take coffee and tea, 25 students take mile and tea, 12 students take milk only, 5 students take coffee only and 8 students take tea only. Then, the number of students who did not take any of the three drinks, is

a) 10 b) 20 c) 25 d) 30

19. Consider the following statements:
(i) Every reflexive relation is antisymmetric
(ii) Every symmetric relation is antisymmetric
Which one among (i) and (ii) is true?

a) (i) alone is true
b) (ii) alone is true
c) Both (i) and (ii) true
d) Neither (i) and (ii) is true

20. Given $n(U) = 20, n(A) = 12, n(B) = 9, n(A \cap B) = 4$, where U is the universal set, A and B are subsets of U, then $n[(A \cup B)^c]$ equals to

a) 10 b) 9 c) 11 d) 3