Q. No	Questions

1. Write in set-builder form:

   i) A= $\{2, 3, 5, 7, 11, 13\}$ ii) $B = \{3, 10, 29, 66, 127\}$

   ii) C= $\{1, 4, 9, 16, \dots\}$, iv) D = $\left\{\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}, \dots\right\}$

2. Write using intervals: (i) $1 \le x \le 5$, $(ii) 3 < x \le 7$

3. Write P(A) if A = $\{1, 4, 9\}$

4. Rewrite in roster form $\{x : x \text{ is a letter in the word } ASSASSINATION\}$

5. Find A-B and B-A if $A = \{2, 3, 6\} \text{ and } B = \{1, 3, 7, 10\}$

6. Two finite sets have m and n elements. The total number of subsets of the first set is 112 more than the total number of subsets of the second set. Find the value of m and n. (Ans. 7, 4)

7. Shade the following using a Venn diagram: i) (AUBUC)' ii) A' ∩(C –B)

8. There are 40 students in Biology class and 60 students in Computer Science class. Find the number of students which are either in Biology or in Computer class in the following cases.

   (i) The two classes meet at the same hour
   (ii) The two classes meet at different hours and 20 students are enrolled in both the subjects. (Ans. 100, 80)

9. Let U be the set of all boys and girls in a school. G be the set of all girls, B be the set of all boys and S be the set of all students who take swimming. Some but not all students in the school take swimming. Draw a Venn diagram showing one of the possible relationships among the sets U, B, G and S.

10. Is $\left\{x : \frac{x+5}{x-7} - 5 = \frac{4x-40}{13-x}\right\}$ an empty set? Why? (Ans. No)

11. Given: For two finite sets A and B, n(A-B) = 10+x, n(B − A) = 3x and n(A∩ B)= x+1. If n(A) = n(B), find the value of x and hence n(A). (Ans. 5, 21)

12. $U = \{1, 2, 3, \dots 10\}, A = \{2, 3, 4, 5\}, B = \{3, 5, 7, 9\}, C = \{1, 3, 5, 7, 9\}.$

   $Find\ (i) A^1 \cap B^1, (ii) A - (B U C), (iii)\ (A - B) U (B - C.$

   $Verify\ (i) A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$ (ii) De- Morgan's laws.

13. Out of 1020 boys in a school, 406 play cricket, 324 play hockey, 250 play football, 80 play cricket and hockey, 64 play hockey and football, 72 play football and cricket and 246 play none of the games. How many boys play

   (i) All the three games

   (ii) only two of the three games

   (iii) Football only.   (Ans. 10, 186, 124)

14. In a class of 40, 18 students took Physics, 21 took Chemistry & 24 took Math. Of these 13 took both M and C, 12 took both P and C and 11 took both P and M. 6 were offered all the three. How many of them took

   i)   exactly two subjects,

   ii)   none of the three subjects

   iii)   at least one of the subjects.   (Ans. 18, 7, 33)

15. In a class of 140 students, 60 play football, 68 play hockey and 75 play cricket, 30 play hockey and cricket, 18 play football and cricket, 42 play football and hockey and 8 play all the three games. Use Venn diagram to find number of students:

   i) who do not play any of the three games.

   ii) who play only cricket

   iii) who play exactly two of the games.   (Ans. 19, 35, 66)

16. In a survey conducted on a group of 1000 people it is found that 40% buy product A, 20% buy product B, and 10% buy Product C, 5% buy products A and B, 3% buy products B and C and 4% buy products A and C. If 2% of the group buy all the three products, then find the number of people who buy

   i)   product A only.

   ii) at least one of the products A, B or C   (Ans. 330, 600)

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