CHAPTER 1 – SETS

Focus Area based Questions

1. If the number of proper subset of a set is 63, then the number of elements of the set is ……..

2. a) In a survey of 600 students in a school 150 students were found to be taking tea and 225 taking coffee, 100 were taking both tea and coffee. Find how many students were taking neither tea nor coffee.

   b) If A= {x: x is a letter in the word “MATHEMATICS"} and

   B = {y: y is a is a letter in the word "STATISTICS”}, then, find

   (i) A-B (ii) A∩B

3. If A = {2,3,4,5) and B = {4,5,6,7}, then write:
   a) AUB b) A ∩ B c) A – B

4. Let A= {x:x∈N, 1<x≤5}; B = {2,3,6,9} and C = {1,4,5,8,9,10}
   a) Find the number of elements of A.
   b) Verify A∩ (BUC) = (A∩B)∪(A∩C)
   c) If X and Y are two sets such that n(x) = 17, n(Y)= 23 and n(X UY) = 38, then find n(X ∩Y).

5. Let $A = \{x : x \text{ is a prime number less than } 11\}$ and

   $$B = \{x : x \text{ is an integer suchthat } 2 \leq x \leq 8\}$$

   a) Write $C = A \cap B$
   b) Find the number of subsets of C which has 3 elements

6. In a school, a survey among400 students, 100 were listed as taking apple juice, 150 as taking orange juice, and 75 were listed as taking both apple juice as well as orange juice.
   a) How many students take apple juice or orange juice?
   b) How many take apple juice alone not orange juice?
   c) How many students were taking neither apple juice nor orange juice?

7. Which one of the following is equal to $\{x : x \in R, 2 < x \leq 4\}$

   i) $\{2,3,4\}$ ii) $\{3,4\}$ iii) $[2,4]$ iv) $(2,4]$

8. a) If $U = \{1,2,3,4,5,6,7,8,9\}$; $A = \{2,4,6,8\}$ $B = \{2,3,5,7\}$, Verify $(A \cup B)' = A' \cap B'$.
   b) If A and B are two disjoint sets with $n(A) = 4$ and $n(B) = 2$, then $n(A - B) =$……

9. a) If $A = \{a, b, c\}$, then write the power set of P(A).
   b) If the number of subsets with two elements of a set P is 10, then find the total number of elements in the set P.
   c) Find the number of elements of the power set of P.

10. Let $A = \{x : x \in W, x < 5\}$and $B = \{x : x$ *is a prime number less than* $5\}$, $U = \{x : x$ is an integer, $0 \leq x \leq 6\}$,
    a) Write A, B in roster form.
    b) Find $(A - B) \cup (B - A)$
    c) Verify that $(A \cup B)' = A' \cap B'$