

CHAPTER 1

Assignment Questions:-

1) Write the followings sets in roster form and set-builder form.

- i) The set of all letters in the word "HYDERABAD".
- ii) The set of integers whose square is less than 25.
- iii) The set of all numbers dividing 36.
- iv) The set of reciprocals of natural numbers less than 20.

2) Write the following sets in tabular form.

- i) $A: \{x: x \in N \text{ and } \frac{-11}{2} \leq x \leq \frac{11}{2}\}$
- ii) $B: \{x: x^2 + 7x - 8 = 0, x \in R\}$
- iii) $C: \{x: x = \frac{n}{n^2 + 1}, 1 \leq n \leq 4, x \in N\}$

3) Write the following in set-builder form.

- i) $A = \{\frac{2}{5}, \frac{3}{7}, \frac{4}{9}, \frac{5}{11}, \frac{6}{13}, \frac{7}{15}\}$
- ii) $B = \{0, 3, 8, 15, 24, 35, 48, 63\}$
- iii) $C = \{1, \frac{1}{8}, \frac{1}{27}, \frac{1}{64}, \frac{1}{125}, \frac{1}{216}\}$

4) Write down all the subsets of the following sets.

- i) $\{3, 4, \{a\}, 1\}$
- ii) $\{0, 1, \emptyset, \{0, \emptyset\}\}$

5) If number of subsets of a set is 16 then, find the number of elements of in the set.

6) Using suitable examples show that $(A \cup B) \cap C = A \cap C \cup B \cap C$ and $(A \cap B) \cup C = A \cup C \cap B \cup C$

7) Using Venn diagram show that

- i) $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$
- ii) $(A - B)$, $(A \cap B)$ and $(B - A)$ are disjoint sets.
- iii) $A \cup A' = U$
- iv) $A \cap A' = \emptyset$

8) If $P(A) = \{ \emptyset, \{1\}, \{2\}, \{1,2\} \}$ then write A.

9) Two finite sets have 'm' and 'n' elements respectively.

The total number of subsets of first set is 56 more than the total of subsets of second set, find the values of m and n?

10) Given $A = \{ 1, 2, 3, 4 \}$, $B = \{ 3, 4, 5, 6 \}$ and $C = \{ 1, 3, 5 \}$ verify that

- i) $A - (B \cup C) = (A - B) \cup (A - C)$
- ii) $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$

11) If $U = \{ a, e, i, o, u \}$, $A = \{ a, e, i \}$, $B = \{ e, o, u \}$, $C = \{ a, i, u \}$ then find

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|-------------------------|-----------------------------|
| i) $A \cup U$ | vi) $A \cup B$ |
| ii) $A \cap U$ | vii) $(A - B) \cap (A - C)$ |
| iii) $A \cup \emptyset$ | viii) $A - (B \cup C)$ |
| iv) $A \cap \emptyset$ | ix) $A' \cap (B \cup C)'$ |
| v) $A - B$ | x) $A' \cup (B \cap C)'$ |

- 12) In a group of students, 100 students know Arabic, 50 know French and 25 know both. Each of the students knows either Arabic or French. How many students are there in the group?
- 13) If $n(A) = 285$, $n(B) = 195$, $n(U) = 500$, $n(A \cup B) = 400$. Find $n(A \cap B)$.
- 14) If A and B are two sets such that $n(A) = 20$, $n(B) = 30$, $n(A \cup B) = 40$, find $n(A \cap B)$.
- 15) In a survey it was found that 21 people liked product A, 26 liked product B and 29 liked product C. If 14 people liked product A and B, 12 people liked product C and A, 14 people liked products B & C and 8 liked all the three products, find how many liked product C only.