



Blue Print (As per PU Board)

Topic	1 mark questions	2 marks questions	3 marks questions	5 marks questions	Total Marks
Sets	1	2	1	-	8

One mark questions

1. Write the set $A = \{x : x \text{ is an even prime}\}$ in the tabular form.

Answer: $A = \{2\}$

2. Define subset.

Answer: A set A is said to be a subset of a set B if every element of A is also an element of B .

3. Define power set.

Answer: The collection of all subset of a set A is called the power set of A .

4. If $n(P(A)) = 32$, then find the number of elements of A .

Answer: $n[P(A)] = 32 = 2^5, \therefore n(A) = 5$

5. Define closed interval.

Answer: The interval which contains the end point also is called closed interval

i.e. $[a, b] = \left\{ \frac{x}{a} \leq x \leq b \right\}$ is closed interval

Two marks questions

6. Examine whether the set $A = \left\{ \frac{x}{x^3} - x = 0, x > 1 \right\}$ is an empty set or not.

Answer: $x^3 - x = 0 \Rightarrow x(x^2 - 1) = 0$

$$\Rightarrow x(x-1)(x+1) = 0$$

$$\Rightarrow x = 0 \text{ or } x = 1 \text{ or } x = -1$$

7. State whether the set of positive factors of 25 which are greater than 5 is finite or not.

Answer: Positive factors of 25 are 1, 5, 25

\therefore set of positive factors of 25 which are greater than 5 is $\{25\}$. This is finite.

8. Write all the subset of the set $A = \left\{ \frac{x}{4x} < 5, x \in N \right\}$

Answer: $A = \{1\}$

\therefore The set of all subsets of A is $\{\phi, A\}$

Three marks questions

9. If $A = \{1, 2, 3\}$, $B = \{2, 4, 6\}$ and $C = \{1, 3, 5\}$. Verify that $(A \cup B) \cup C = A \cup (B \cup C)$

Answer: $A \cup B = \{1, 2, 3, 4, 6\}$

$\therefore (A \cup B) \cup C = \{1, 2, 3, 4, 5, 6\}$

$B \cup C = \{1, 2, 3, 4, 5, 6\}$

$\therefore A \cup (B \cup C) = \{1, 2, 3, 4, 5, 6\}$

$\therefore (A \cup B) \cup C = A \cup (B \cup C)$

10. If $\cup = \{a, b, c, d\}$ and $A = \{a, c\}$, $B = \{b, c\}$. Show that $(A \cap B)' = A' \cup B'$

Answer: $A \cap B = \{c\}$

$\therefore (A \cap B)' = \{a, b, d\}$



$$A' = \{b, d\} \text{ and } B' = \{a, d\}$$

$$\therefore A' \cup B' = \{a, b, d\} \quad \therefore (A \cap B)' = A' \cup B'$$

11. If $A = \left\{ \frac{x}{x} = 2n+1, n \leq 5, n \in N \right\}$ $B = \left\{ \frac{x}{x} = 3n-2, n \leq 5, n \in N \right\}$ Find (i) $A \cup B$ (ii) $A \cap B$

Answer: $A = \{3, 5, 7, 9, 11\}$

$$B = \{1, 4, 7, 10, 13\}$$

$$\therefore A \cup B = \{1, 3, 4, 5, 7, 9, 10, 11, 13\}$$

$$A \cap B = \{7\}$$

12. In a survey of 300 students in a school, 75 students are found to be drinking tea and 125 drinking coffee, 50 were drinking both tea and coffee. Find how many students drink neither tea nor coffee.

Answer: Let A be the set of students who drink tea and B be the set of students who drink coffee.

Here $n(A) = 75$, $n(B) = 125$ and $n(A \cap B) = 50$

$$n(A \cup B) = n(A) + n(B) - n(A \cap B)$$

$$= 75 + 125 - 50$$

$$= 130$$

$$\therefore \text{number of students who drink neither tea nor coffee} = 300 - 130 = 170$$