

CLASS –XI**TEST- 1****Time: 1 hr****SUBJECT – MATHEMATICS****TOPIC – SETS****Max Marks: 50**

Q1. If $A = \{1, 2, 3, 4, 5\}$, $B = \{4, 5, 6, 7, 8\}$, $C = \{7, 8, 9, 10, 11\}$ and $D = \{10, 11, 12, 13, 14\}$. Find (i) $A \cup B$

Verify the following

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

3 marks

Q2. Let $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$. $A = \{2, 4, 6, 8\}$ and $B = \{2, 3, 5, 7, 8\}$. Find (i) $(A \cup B)'$
(ii) $(A \cap B)'$

Verify the following

(i) $(A \cup B)' = A' \cap B'$

3 marks

Q3. Let A and B be two sets such that $n(A) = 24$, $n(A \cup B) = 46$ and $n(A \cap B) = 8$. Find (i) $n(B)$ (ii) $n(A - B)$

2 marks

Q4. What is the number of subsets and proper sub sets of a set containing n -elements.

2 marks

Q5. In a survey of 800 students in a school 200 were listed as taking apple juice, 250 taking orange juice and 125 were taking both apple as well as orange juice. Find how many students were taking neither apple juice nor orange juice.

3 marks

Q6. There 40 students in a chemistry class and 60 students in physics class. Find the number of students which are either in Physics class or Chemistry class in the 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.

3 marks

Q7. In a class of 35 students, 17 have taken mathematics 10 have taken mathematics but not economics. Find the number of students who have taken both mathematics and economics and the number of students who have taken economics but not mathematics, if it is given that each student has taken either mathematics or economics or both.

3 marks

Q8. If $A = \{x : x = 2n + 1, n \leq 4, n \in \mathbb{N}\}$ and $B = \{y : 2 < y < 7, y \in \mathbb{N}\}$, find (i) $A \cap B$

B

3 marks

Q9. Using laws of algebra of sets, show that (i) $(A \cup B) \cap (A \cup B') = A$ (ii) $A \cup (B - A) = A \cup B$

– A) = A U B

4 marks

Q10. Of the members of three athletic teams in a certain school, 21 are in the basket ball team, 26 in hockey team and 29 in the football team. 14 play hockey and basket ball, 15 play hockey and football, 12 play football and basket ball and 8 play all the three games. How many members are there in all?

4 marks

Q11. If $A = \{a, b, c\}$. write subsets of set A. Also mention the proper subsets of A.

2 marks

Q12. Describe the following sets in set builder

form :- (i) $\{3, 6, 9, \dots\}$

1 mark

Q13. Draw venn diagram of (i) $(A \cup B) \cap C$

1 marks

Q15. How many element has $P(A)$, if $A = \{ \}$

1mark

Q16. If A is a subset of $\{ \}$. Prove that $A = \{ \}$. 1mark

Q17. Find the smallest set A such that $A \cup \{3, 5\} = \{1, 2, 3, 5, 4\}$

2 marks

Q18 State and Prove De- Morgans law 4marks

Q19 If $A \cap X = B \cap X = \emptyset$ show that $A = B$ 4 marks

Q20 Using properties show that $(A \cup B) - (A \cap B) = (A-B) \cup (B-A)$

4 marks