

INTERNATIONAL INDIAN SCHOOL BURAI DAH

CLASS – 11 – WS- 01 (2022 – 2023)

MATHEMATICS

CH – 1 : SETS

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1. If  $A = \emptyset$ , the number of elements in  $P(A)$  is

[(a) 0 (b) 1 (c) 2 (d) 4 ]

2.  $A \cup (A \cap B)$  is

[ a) A b) B c)  $A \cup B$  d)  $\{\}$  ]

3. If  $A \cup B = A \cap B$ , then

[a)  $A = \emptyset$  b)  $B = \emptyset$  c)  $A = B$  d)  $A \neq B$  ]

4 If  $U = \{ 1, 2, 3, \dots, 10\}$ ,  $A = \{ 2, 3, 6, 7\}$  and  $B = \{2, 6, 4, 8\}$ , show that

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

5. Given  $A = \{x: x \text{ is a multiple of } 3\}$  and  $B = \{x : x \text{ is even natural number } \}$  are subsets of the universal set  $U = \{x: x \in \mathbb{N}, x \leq 15\}$ . Then show that  $B' - A' = A \cap B'$ .

6. For any two sets  $A$  and  $B$ , prove that  $A' - B' = B - A$ .

7. There are 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 following cases. (a) the two classes meet at the same hour.

(b) the two classes meet at different hours and 20 students are in both subjects.

(Ans. 100,80 )

8. For any two sets  $A$  and  $B$  show that ,  $A = (A \cap B) \cup (A - B)$

9. In a survey of 700 students in a college, 180 were listed as drinking Limca, 275 as

Drinking Miranda and 95 were listed as both drinking Limca as well as Miranda.

Find how many students were drinking neither Limca nor Miranda. (Ans. 340 )

10. 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. ( Ans. 7, 18 )

11. In a survey of 25 students it was found that 15 had taken Mathematics, 12 had taken Physics and 11 had taken Chemistry, 5 had taken Mathematics and Chemistry, 9 had taken Mathematics and Physics, 4 had taken Physics and Chemistry and 3 had taken all the three subjects. Find the number of students that had (a) only Chemistry (b) only Mathematics (c) only Physics (d) Physics and Chemistry but not Mathematics (e) Mathematics and Physics but not chemistry (f) only one of the subjects (g) at least one of the three subjects (h) none of the subjects ( Ans.5,4,2,1,6,11,23,2)

12. A survey shows that 76% of the Indians like oranges, where as 62% like bananas. What % of the Indians like both oranges and bananas. (Ans. 38 )

13. In a group of people, 50 speak both English and Hindi and 30 people speak English but not Hindi. All the people speak at least one of the two languages. How many speak English ? (Ans. 80)

14. In a certain locality of Delhi, there are 1000 families. A survey indicated that 300 subscribed to "The Hindustan Times daily" news paper and 250 subscribed to "The States Man" daily news paper. Of these two categories, 100 subscribed to both. Find the number of families which did not subscribe to any of these news papers. (Ans. 550)

15. A survey of 500 Television viewers produced the following information, 285 watch foot ball, 195 watch hockey, 115 watch basket ball, 45 watch football and basket ball 70 watch foot ball and hockey, 50 watch hockey and basket ball, 50 do not watch any

of these games. (a) how many watch all the three games. (b) how many watch exactly one of the three games. (Ans. 35,325)

16. An investigator interviewed 100 students to determine the performance of three drinks : milk ,coffee and tea. He reported that 10 students take all the three drinks students take milk and coffee, 25 students take milk and tea,12 students take milk only, 5 students take coffee only and 8 students tea only. Find the number of students who did not take any of three drinks. (Ans. 20 )

17. In a survey of 1000 persons it is found that 720 persons like tea and 450 persons like coffee. What is the least number that must have liked tea and coffee? (Ans. 170)

18. If A and B are two sets such that  $n(A) = 115, n(B) = 326, n(A-B) = 47$  ,find  $n(A \cup B)$ . (Ans: 373)