TIME - 45Min   MAXIMUM MARKS:20

Choose the correct option: $(3\times 1 = 3)$

1. For any set A, $(A')'$ is equal to
   (a) A' (b) A (c) $\emptyset$ (d) none of these

2. Let X, Y, Z be three sets given as
   $n(X) = 15, n(Y) = 22, n(Z) = 14$ and $n(X \cap Y) = 11, n(Y \cap Z) = 8, n(X \cap Z) = 5, n(X \cap Y \cap Z) = 3$, then $n(X \cup Y \cup Z)'$ equals if X, Y, Z are $subsets$ of U and $n(U) = 35$,
   (a) 35   (b) 30   (c) 26   (d) 5

3. Let $S = \{x: x$ is a $positive$ $multiple$ of 3 $less$ $than$ $100\}, P = \{x: x$ is a $prime$ $number$ $less$ $than$ $20\}$. Then $n(S) + n(P)$ is
   (a) 34   (b) 31   (c) 33   (d) 41

Fill in the blanks: $(2\times 1 = 2)$

4. If A and B are two finite sets, then $n(A) + n(B)$ is equal to _____.
5. Power set of the set $A = \{1, 2\}$ is _____.

Answer the following: $(3\times 1 = 3)$

6. Write the following sets in the roaster form.
   A = {x| x is a positive integer less than 10 and $2^x - 1$ is an odd number}.
7. Write the following in set builder form.
   A = {3, 9, 27, 81}
8. If the universal set $U = \{1, 3, 5, 7, 9, 11, 13, 15, 17\}, B = \{1, 3, 7, 13, 15\}$ then find B'.

Short Answer Type questions: ($2\times 2 = 4$)

9. Let A, B, and C be the sets such that $A \cup B = A \cup C \ and \ A \cap B = A \cap C$. Then show that B=C.
10. For any sets A and B, Show that $P(A \cap B) = P(A) \cap P(B)$.

Long Answer Type - I Questions: ($2\times 4 = 8$)

11. In a survey of 400 students in a school, 100 were listed as taking apple juice. 150 as taking orange juice and 75 were listed as taking both apple as well as orange juice. Find how many students were taking neither apple juice nor orange juice.
12. There are 200 individuals with a skin disorder, 120 had been exposed to chemical C_1, 50 to chemical C_2, and 30 to both chemicals C_1 and C_2. Find the number of individuals exposed to Chemical C_1, but not chemical C_2, (ii) Chemical C_2 but not chemical C_1, (iii) Chemical C_1 or chemical C_2.

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SUBJECT – MATHEMATICS, CLASS – XI
CHAPTER – 1(SETS)
WORKSHEET(STANDARD)

TIME - 45Min **MAXIMUM MARKS:20**

Choose the correct option: $(3\times 1 = 3)$

1. Given two finite sets A and B such that $n(A) = 115; n(B) = 326; n(A - B) = 47; then$ $n(A \cup B)$ is
   (a) 373   (b) 165   (c) 370   (d) None of these

2. Given two finite sets A and B such that $n(A) = 3$ and $n(B) = 6$. Then minimum numbers of elements in $A \cup B$ is
   (a) 3   (b) 6   (c) 9   (d) 18

3. If a set A containing 6 elements, then number of non-empty subsets of A is
   (b) 36   (b) 30   (c) 64   (d) 63

Fill in the blanks: $(2\times 1 = 2)$

4. When $A = \emptyset$, then the number of elements in $P(A)$ is _____.

5. If A and B are any two sets, then $A - B$ is equal to _____.

Answer the following: $(3\times 1 = 3)$

6. Write the following sets in the roaster form.
   $H = \left\{ x : x = \frac{n}{n^2+1} \text{ } and \text{ } 1 \leq n \leq 3, where \text{ } n \in N \right\}$.

7. Write the following in set builder form
   $E = \left\{ \frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}, \frac{5}{6}, \frac{6}{7}, \frac{7}{8}, \frac{8}{9}, \frac{9}{10} \right\}$

8. Write the following in interval form
   $\{ x : x \in R, -4 \leq x < 6 \}$

Short Answer Type questions: $(2\times 2 = 4)$

9. Show that if $A \subset B, then$ $C - B \subset C - A$.

10. Assume that $P(A) = P(B), Show$ $that$ $A = B$.

Long Answer Type - I Questions: (2× 4 = 8)

11. A college awarded 38 medals in football, 15 in basketball and 20 in cricket. If these medals went to a total of 58 men and only three men got medals in all the three sports, how many received medals in exactly two of the three sports?

12. In a survey of 60 people, it was found that 25 people read newspaper H, 26 read newspaper T, 26 read newspaper I, 9 read both H & I, 11 read both H and T. 8 read both T & I, 3 read all three newspapers. Find:
    (i)   The number of people who read at least one of the newspapers.
    (ii)   The number of people who read exactly one newspaper.

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SUBJECT – MATHEMATICS, CLASS – XI
CHAPTER – 1(SETS)
WORKSHEET(ADVANCE)

TIME - $45 Min$ MAXIMUM MARKS:20

Choose the correct option: $(3 \times 1 = 3)$

1. Let $A = \{(x,y): y = e^{2x}, x \in R\}$ and $B = \{(x,y): y = e^{-2x}, \forall x \in R\}$, then $A \cap B$ is
   (a) Not a set   (b) Singleton set   (c) Empty Set (d) None of these
2. If $A = \{x: x = 4n + 1, \forall\ 2 \le n \le 6\}$, then the number of subsets of A are
   (a) 2^2 (b) 2^3 (c) 2^5 (d) 2^6
3. If $N_a = \{na, n \in N\}$, then $N_3 \cap N_5$ is equal to
   (a)N_8 (b) N_5(c) N_3(d) N_{15}

Fill in the blanks: $(2 \times 1 = 2)$

4. For all sets A and $B, A - (A \cap B)$ is equal to _____.
5. If $U = \{1,2,3,4,5,6,7,8,9,10\}, A = \{1,2,3,5\}, C = \{2,3,4,8\}$, then $(C - A)'$ is _____.

Answer the following: $(3 \times 1 = 3)$

6. Write the following sets in the roaster form.
   N = $\{x: x^4 - 5x^2 + 6 = 0, x \in R\}$
7. Write the following in set builder form.
   F = $\left\{1, \frac{1}{4}, \frac{1}{9}, \frac{1}{16}, \frac{1}{25}, \ldots\ldots\ldots\ldots\right\}$
8. If A is a finite set containing n elements, then how many subsets of set A are obtained?

Short Answer Type questions: $(2\times 2 = 4)$

9. Assume that $P(A) = P(B)$, *Show that $A = B$.*
10. Let A and B be two sets. If $A \cap X = B \cap X = \emptyset \ and \ A \cup X = B \cup$ $X \ for \ some \ set \ X, then \ Show \ that \ A = B.$

Long Answer Type - I Questions: $(2\times 4 = 8)$

11. Prove that (a) $\left(\bigcup_{i=1}^{n} A_i\right)' = \bigcap_{i=1}^{n} A_i'$, (b) $\left(\bigcap_{i=1}^{n} A_i\right)' = \bigcup_{i=1}^{n} A_i'$
12. From 50 students taking examinations in Mathematics, Physics and Chemistry, each of the student has passed in at least one of the subject, 37 passed Mathematics, 24 Physics and 43 Chemistry. At most 19 passed Mathematics and Physics, at most 29 Mathematics and Chemistry and at most 20 Physics and Chemistry. What is the largest possible number that could have passed all three examinations?

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TIME - 45Min   **MAXIMUM MARKS:20**

Choose the correct option: $(3\times 1 = 3)$

1. Each set X_r contains 5 elements and each $setY_r$ contains 2 elements and $\bigcup_{r=1}^{20} X_r = S = \bigcup_{r=1}^{n} Y_r$. If each element of S belong to exactly 10 of the $X_r's$ and to exactly 4 of the Y_r's then n is
   (a) 10   (b) 20   (c) 100   (d) 50
2. Two finite sets have m and n elements respectively. The total number of subsets of first set is 56 more than the total number of subsets of the second set. The values of m and n respectively are
   (a)7, 6   (b) 5, 1   (c) 6, 3   (d) 8, 7
3. Let $A = \{x: x \in R, |x| < 2\}, B = \{x: x \in R, |x - 2| \geq 2\}$ and $A \cup B = R - C$, then the set C equals
   $(a)\{x: -2 < x \leq 2\},$ $(b)\{x: -2 \leq x \leq 4\}$
(c) $\{x: 2 \leq x < 4\}$ (d) None of these

Fill in the blanks: $(2\times 1 = 2)$

4. If A and B are finite sets such that $A \subset B$, then $n(A \cup B) = $ _____.
5. If A is a finite set containing n elements, then number of nonempty subsets of A is _____.

Answer the following: $(3\times 1 = 3)$

6. Show that $A \cup B = A \cap B$ $implies$ $A = B$.

7. A survey shows that 63% of the people watch a News channelwhereas 76% watch another channel. If $x\%$ of the people watch both channel, then findthe interval in which x lies.

8. In a town of 840 persons, 450 persons read Hindi, 300 readEnglish and 200 read both. Then find the number of persons who read neither Hindi nor English.

Short Answer Type questions: $(2\times 2 = 4)$

9. Is it true that for any sets A and B,
$$P(A) \cup P(B) = P(A \cup B)? Justify\ your\ answer$$

10. In a group of 65 peoples, 40 like cricket, 10 like both cricket and tennis. How many like tennis only but not cricket? How many like tennis?

Long Answer Type - I Questions: $(2\times 4 = 8)$

11. 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 products A & B, 12 people liked products C & A, 14 people liked products B & C and 8 liked all the three products. Find how many liked product C only.

12. 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 3 subjects. Find the number of students that had (i) only chemistry,(ii) physics and chemistry, but not mathematics, (iii) only one of the subjects, (iv) at least one of the three subjects, (v) none of the subjects.

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