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Std: - XI

Sub: - Mathematics Worksheet no.1

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SETS

EASY

1. Describe the following set in Roster form: { x: x is a two digit number such that the sum of its digits is 8
2. Describe the set {0} in the set builder form.
3. If X and Y are any two sets, then find $X \cap (X \cup Y)^c$.
4. Write the number of subsets of the letters of the word 'FOLLOW'
5. Find the number of non empty subsets of the set { 1, 2, 3, 4 }

AVERAGE

1. *A* and *B* are two sets such that *n(A – B)* = 14 + x, *n(B – A)* = 3x and *n(A ∩ B)* = x. Draw a Venn diagram to illustrate information and if *n(A)* = *n(B)* then find the value of x.
2. Prove that $(A-B)\cup(B-A)=(A\cup B)-(A\cap B)$
3. If A= {1, 2}.How many elements does P (P (P (A))) contains.
4. If X is the universal set and A, B are subsets of X such that *n* (X) = 99, *n* (A') = 80, *n* (B') = 85 and *n* [(A ∩ B)'] = 94, find *n* (AU B).
5. Let A= {x: x ∈ R and $x^2 - 4x + 3 = 0$}, B= {x: x ∈ Z and $x^2 < 3$} and C = {$\sqrt{m}$: m ∈ N} State with reasons which of the following are true or false.

   1) A ⊂ C, 2) –1 ∈ B, 3) A ∪ C = C

6. For any sets A and B, show that $P(A\cap B)=P(A)\cap P(B)$
7. Describe the following sets in Roster form

   i) {x : x is an integer, $|x| \le 2$} ii) {x : 3x+5 < 23, $n \in N$ }

8. Describe the following sets in set-builder form:

   i) $\left\{1,\frac{1}{2},\frac{1}{3},\frac{1}{4},.....\right\}$ ii) $\left\{\frac{1}{2},\frac{2}{5},\frac{3}{10},.,\frac{4}{17},.,\frac{5}{26},\frac{6}{37},\frac{7}{50}\right\}$

HOTS

1. There are 575 individuals with a skin disorder. 180 had been exposed to Chemical C_1, 210 to chemical C_2 and 185 to chemical C_3. 80 exposed to both C_1 and C_2, 100 exposed to both C_2 and C_3, and 60 to C_1 and C_3. There were 10 exposed to all the three. find the number of individuals exposed to

   (i) chemical C_1 but not to C_3

   (ii) only chemical C_2

   (iii) chemical C_2 and C_3 but not C_1

2. In town of 10000 families, it was found that 40% families buy news paper A, 20 % buy news paper B and 10% buy news paper C. 5% families buy A & B, 3% buy B & C and 4% buy A & C. If 2 % families buy all three news papers, find the number of families which buy (i) A only, (ii) B only, (iii) non of A, B & C.
3. In a class of 200 students who appeared certain examinations, 35 students failed in MHT-CET, 40 in AIEEE and 40 in IIT entrance, 20 failed in MHT-CET and AIEEE, 17 failed in IIT and AIEEE, 15 failed in MHT-CET and IIT entrance and 5 failed in all 3 examinations. Find how many students

   i) Did not fail in any examination.

   ii) Failed in IIT or AIEEE entrance.

   iii) What will you suggest the students failed in all examinations?

5. A college awarded38 medals in football, 15 in basketball and 20 in cricket. If these medals went to a total of 58 men and only 3 men got medals in all 3 sports, how many received medals in i) exactly two of the 3 sports

   ii) all the 3 sports

   iii) football and cricket but not basketball.