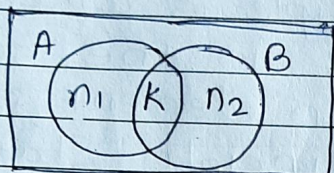Semester : **III**   Subject : **DSGT**   Academic Year: 2022-2023

Inclusion- Exclusion Principle -:
Theorem 1 -
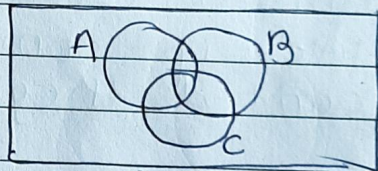If A and B are two finite sets and $n(A)$, $n(B)$ denote the no. of elements in A and B then,

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

suppose, A & B are 2 sets, $n(A)$, $n(B)$ are the no. of elements in set A & B then,
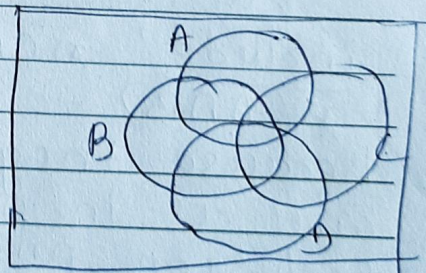
$$n(A \cup B) = n(A) + n(B) - n(A \cap B)$$

If we have **3 sets**.
then,

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

If we have **4 sets** -
then,

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