

# PROBABILITY

UDAY KUMAR - FWC22086

**Q-12,13.3,14**

**If A and B are two events such that  $A \subset B$  and  $P(B) \neq 0$ , then which of the following is correct ?**

- a)  $P(A|B) = \frac{P(B)}{P(A)}$                       b)  $P(A|B) < P(A)$   
c)  $P(A|B) \geq P(A)$                       d) None of these

**solution**

if  $A \subset B$  and  $P(B) \neq 0$  then

$$\Rightarrow AB = A$$

also  $P(A) < P(B)$

$$P(A|B) = \frac{P(AB)}{P(B)} = \frac{P(A)}{P(B)} \quad (1)$$

we know that

$$P(B) \leq 1$$

$$1 \leq \frac{1}{P(B)}$$

multiply both sides with  $P(A)$ , we get

$$P(A) \leq \frac{P(A)}{P(B)}$$

from the above eq 10

$$P(A) \leq P(A|B)$$

$$\boxed{P(A | B) \geq P(A)} \quad (2)$$