

# Assignment 1

**AI1110:**Probability And Random Variables  
Indian Institute of Technology Hyderabad

**RAJIV CHAUDHARY**  
**AI22BTECH11021**

**12.13.6.19:**If A and B are any two events such that  $Pr(A) + Pr(B) - Pr(AB) = Pr(A)$ , then choose the correct option

a)  $Pr(B|A) = 1$

b)  $Pr(A|B) = 1$

c)  $Pr(B|A) = 0$

d)  $Pr(A|B) = 0$

**Solution:** Given

$$Pr(A) + Pr(B) - Pr(AB) = Pr(A) \quad (1)$$

$$Pr(B) - Pr(AB) = 0 \quad (2)$$

$$Pr(B) = Pr(AB) \quad (3)$$

$$Pr(B|A) = \frac{Pr(AB)}{Pr(A)}$$

$$Pr(B|A) = \frac{Pr(B)}{Pr(A)} \text{ from Eq 3}$$

$$Pr(A|B) = \frac{Pr(AB)}{Pr(B)}$$

$$Pr(A|B) = \frac{Pr(B)}{Pr(B)} \text{ from Eq 3}$$

$$Pr(A|B) = 1$$

**∴ Option b is correct.**