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## **Assignment 1**

## AI1110:Probability And Random Variables Indian Institute of Technology, Hyderabad

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**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

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

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

$$Pr(B) = Pr(AB) \tag{3}$$

1) Pr(B|A)

$$Pr(B|A) = \frac{Pr(AB)}{Pr(A)}$$
(4)

$$Pr(B|A) = \frac{Pr(B)}{Pr(A)}$$
(5)

2) Pr(A|B)

$$Pr(A|B) = \frac{Pr(AB)}{Pr(B)}$$
(6)

$$Pr(A|B) = \frac{Pr(B)}{Pr(B)}$$
(7)

$$\Pr\left(A|B\right) = 1\tag{8}$$

.. Option b is Correct