PROBABILITY

UDAY KUMAR - FWC22086

13.1.6 [1]If $\Pr(A)= \frac{1}{2}$,$\Pr(B)$=0,then $\Pr(A \mid B)$ is

a)0   b)$\frac{1}{2}$

c)not defined   d)1

Solution:
From the defnition of conditional probability

$$\Pr(A \mid B) = \frac{\Pr(AB)}{\Pr(B)} \tag{13.1.6.1}$$

given P(B) = 0 implies B = $\emptyset$

$$AB = \emptyset \tag{13.1.6.2}$$
$$\Pr(AB) = 0 \tag{13.1.6.3}$$
$$\Pr(A \mid B) = \frac{P(AB)}{P(B)} \tag{13.1.6.4}$$
$$\Pr(A \mid B) = \frac{0}{0} \tag{13.1.6.5}$$

$\therefore \Pr(A \mid B)$ is not defined

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[1]Read question numbers as (CHAPTER NUMBER).(EXERCISE NUMBER).(QUESTION NUMBER)