AI1110 : Probability And Random Variables Assignment 1

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‘ **12.13.1.7:** Two coins are tossed once, where
(i) E : Tail appears on one coin,
F : One coin shows head.
(ii) E : No tail appears,
F : No head appears.

Answers :
(i) $\frac{2}{3}$
(ii) 0

Solutions :

Sample Space :
HH, HT, TH, TT

Where,
H - Heads
T - Tails

Formulae :

$$P(E|F) = \frac{P(E \cap F)}{P(F)} \tag{1}$$

(i) From the sample space, We can see that the probability of the concerned events is :
P($E \cap F$) i.e P(Tail appears on one coin and One coin shows head) : $\frac{2}{4}$
P(F) i.e P(One coin shows head) : $\frac{3}{4}$

Plugging the values in Equation 1 :

P(E|F) = $\frac{2}{3}$

(ii) From the sample space, We can see that the probability of the concerned events is :
P($E \cap F$) i.e P(No tail appears and No head appears) : 0
P(F) i.e P(No head appears) : $\frac{1}{4}$

Plugging the values in Equation 1 :

P(E|F) = 0