

# Assignment 6

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Download all python codes from

<https://github.com/Adarsh541/AI1103-prob-and-ranvar/blob/main/Assignment6/codes/Assignment6.py>

and latex-tikz codes from

<https://github.com/Adarsh541/AI1103-prob-and-ranvar/blob/main/Assignment6/Assignment6.tex>

## 1 PROBLEM(GATE 2020(ST) Q19)

Let E,F and G be mutually independent events with  $P(E) = \frac{1}{2}$ ,  $P(F) = \frac{1}{3}$  and  $P(G) = \frac{1}{4}$ . Let p be the probability that at least two of the events among E,F and G occur. Then  $12 \times p =$

## 2 SOLUTION(GATE 2020(ST) Q19)

$$p = P(EFG) + \sum P(EFG') \quad (2.0.1)$$

since the events are mutually independent

$$P(EFG) = P(E)P(F)P(G) \quad (2.0.2)$$

$$\begin{aligned} \Rightarrow p &= P(E)P(F)P(G) + P(E')P(F)P(G) \\ &+ P(E)P(F')P(G) + P(E)P(F)P(G') \end{aligned} \quad (2.0.3)$$

$$\Rightarrow 12 \times p = \frac{7}{2} \quad (2.0.4)$$