# Assignment 6

Adarsh Sai - AI20BTECH11001

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)

$$p = P(EFG) + \sum P(EFG') \tag{2.0.1}$$

since the events are mutually independent

$$P(EFG) = P(E)P(F)P(G) \tag{2.0.2}$$

$$\implies p = \frac{1}{2}\times\frac{1}{3}\times\frac{1}{4} + \frac{1}{2}\times\frac{1}{3}\times\frac{1}{4} + \frac{1}{2}\times\frac{2}{3}\times\frac{1}{4} + \frac{1}{2}\times\frac{1}{3}\times\frac{3}{4} \tag{2.0.3}$$

$$\implies 12 \times p = \frac{7}{2} \tag{2.0.4}$$