AI1103 : Assignment 3

Shashank Anirudh - CS20BTECH11040

Download all python codes from

and latex-tikz codes from

PROBLEM GATE 2019 (ME), Q. 40:

The probability that a part manufactured by a company will be defective is 0.05.If 15 such parts are selected randomly and inspected,the probability that atleast two parts will be defective is ......

SOLUTION:

Let X$\in \{0, 1, 2, 3....15\}$ be the random variable,where X represents the number of defective parts.The distribution is binomial.

$$p = 0.05 \tag{1}$$

$$q = 1 - p = 0.95 \tag{2}$$

Probability that atleast two parts will be defective is $\Pr(X > 1)$.

$$\Pr(X > 1) = 1 - \Pr(X = 0) - \Pr(X = 1) \tag{0.0.1}$$

$$= 1 - {}^{15}C_0 p^0 q^{15} - {}^{15}C_1 p^1 q^{14} \tag{0.0.2}$$

$$\tag{0.0.3}$$

$$\therefore \Pr(X > 1) = 0.1709 \tag{0.0.4}$$