AI1103 : Assignment 4

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Download all python codes from

https://github.com/BokkaRajaRaviKiranReddy/AI1103/tree/main/Assignment4/codes

and latex codes from

https://github.com/BokkaRajaRaviKiranReddy/AI1103/blob/main/Assignment4/Assignment4.tex

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A six-faced fair dice is rolled five times. The probability (in percentage) of obtaining “ONE” at least four times is
a)33.3
b)3.33
c)0.33
d)0.0033

SOLUTION

Let X be the random variable denoting the number the times ”ONE” is obtained when a six-faced die is rolled n-times.X follows binomial distribution.
From binomial Distribution,

$$\Pr(X = k) = {}^{n}C_k p^k (1-p)^{n-k} \qquad k = 0, 1, ..., n$$

For this given problem $n = 5, p = \frac{1}{6}$ for a six-faced die
The probability (in percentage) of obtaining “ONE” at least four times is $\Pr(X \geq 4) \times 100$

$$\Pr(X \geq 4) = \sum_{k=4}^{5} \Pr(X = k)$$
$$= \Pr(X = 4) + \Pr(X = 5)$$
$$= {}^{5}C_4 \frac{5}{6^5} + {}^{5}C_5 \frac{1}{6^5}$$
$$= \frac{26}{6^5}$$

Probability in percentage is,

$$= \frac{26}{6^5} \times 100$$
$$= 0.334$$

Option c is correct.