Assignment-4

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Download all python codes from

https://github.com/Sushma−AI1103/AI1103_Assingment_4/blob/main/assingment_4.py

1 Problem

Gate ME 1993 - Ques-(7.1) If 20 percent of managers are technocrats , the probability that a random committee of 5 managers consists of exactly 2 technocrats is:

1) 0.2048
2) 0.4000
3) 0.4096
4) 0.9421

2 Solution

Let X be the number of success i.e number of technocrats managers . X has binomial distribution with

$$n = 5; \tag{2.0.1}$$

$$p = \frac{20}{100} = 0.2 \tag{2.0.2}$$

$$q = 0.8 \tag{2.0.3}$$

$$r = 2 \tag{2.0.4}$$

Probability function for binomial distribution is defined as:

$$\Pr(X = r) = {}^{n}C_{r} p^{r} q^{n-r} \tag{2.0.5}$$

$\therefore$

$$\Pr(X = 2) = {}^{5}C_{2}(.2)^{2}(.8)^{3} \tag{2.0.6}$$

$$= 10 \cdot 0.04 \cdot 0.512 \tag{2.0.7}$$

$$= 0.2048 \tag{2.0.8}$$

hence , answer will be (A) .