Nagar YuwakShikshanSannstha's

YeshwantraoChavan College of Engineering

(An Autonomous Institution Affiliated to RashtrasantTukadojiMaharaj Nagpur University)

Hingna Road, Wanadongri, Nagpur.

EVEN Term—2021-22	Mid Semester Exam - II
Semester - II	Date:-23/08/2022
Subject Code : AIML/AIDS-2151	Subject : Probability and Statistics
Time :1½ Hours	Max. Marks: 30

Note:-

- **Each Question is Compulsory.**
- NON programmable calculators are only allowed.
- Assume suitable data wherever it is necessary.

Q1. (A)	The sampling distribution of means of 300 random samples of size 36 is drawn from a population of 1500 which is normally distribution with mean 22.4 and standard deviation 0.048. Determine the expected number of random samples having their means a) Less than 22.37 b) Less than 22.38 or more than 22.41	[5]	CO-3	L3
(B)	A Population consist of four numbers P = {2,3,4,5}. Consider all possible distinct samples of size two with replacement(infinite) a) Find the population mean (μ) b) The Population Standard Deviation (σ) c) The sampling distribution of means ($\bar{x}$) d) The Mean of the Sampling Distribution of means (Mean = $\mu_{\bar{x}}$) e) Standard Deviation of S.D of means Mean = $\sigma_{\bar{x}}$	[5]	CO-3	L3
Q.2 (A)	A sample of 10 measurements of a diameter of a sphere gave a mean 4.38 inches and a standard deviation 0.06 inches. Find a) 95% and b) 99% confidence limits for actual diameter ?	[5]	CO-3	L3
(B)	A sample of 100 voters chosen at random from all voters in a given district indicated that 55% of them were in favor of a particular candidate. Find 99% & 99.73 % confidence limits for proportion of all voters in favour of this candidates?	[5]	CO-3	L3
Q.3 (A)	Fit a curve $y = ax^b$ to the following data: x: 1, 2, 3, 4, 5, 6 y: 2.98, 4.26, 5.21, 6.10, 6.80, 7.5	[5]	CO-4	L3
(B)	Two lines of regression are given by $x + 2y - 5 = 0$ and $2x + 3y - 8 = 0$ If $\sigma_x^2 = 12$, find (i)Mean values of x and y , (ii)The coefficient of correlation between x and y , (iii) The standard deviation of y , (iv) Variance of y .	[5]	CO-4	L3