REG.NO.:

VIT
Vellore Institute of Technology

SCHOOL OF ADVANCED SCIENCES
CONTINUOUS ASSESSMENT TEST - II
FALL SEMESTER 2024-2025

SLOT: E2+TE2

Programme Name & Branch : M.C.A
Course Code and Course Name : PMAT501L- Probability and Statistics
Faculty Name(s) : Dr.D.Kalpanapriya, Dr.D.Easwaramoorthy, Dr. V.Sujatha
Class Number(s) : 7600, 4869,4867
Date of Examination : 17.10.2024
Exam Duration : 90 minutes Maximum Marks: 50

General instruction(s):

- Answer All Questions
  (Statistical table permitted)
- M - Max mark; CO – Course Outcome; BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyze, 5 – Evaluate, 6 – Create)
- Course Outcomes
  2. Understanding the facts of the random variables and find an appropriate distribution for analyzing data specific to experiment
  3. Applying Statistical methods like correlation, regression analysis in analyzing, interpretating experimental data.
  4. Make appropriate decisions using statistical inference that is the central to experimental research.

Q. No	Question	M	CO	BL
1.	The yield y of a chemical process is a random variable whose value is considered to be a linear function of the temperature x. The following data of corresponding values of x and y is found: Temperature °C, x: 0, 25, 50, 75, 100 Yield in grams, y: 14, 38, 54, 76, 95 Find the regression lines, correlation coefficient and also find x when y=87.	10	3	3
2.	A set of three similar coins are tossed 100 times with the following results Number of Heads: 0, 1, 2, 3 Frequency: 36, 40, 22, 2 Fit the Binomial distribution and find the expected frequencies.	10	2	3
3.	In an engineering examination, a student is considered to have failed, secures second class, first class and distinction, according as he/she scores less than 45%, Between 45% and 60%, between 60% and 75% and above 75% respectively. In a particular year 10% of the students failed in the examination and 5% of the student's got distinction. Find the percentages of students who have got first class and second class using normal distribution.	10	2	4

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4.	In a referendum submitted to the 'student body' at a university, 920 men and 450 women voted. 530 of the men and 310 of the women voted 'yes'. Does this indicate a significant difference of the opinion on the matter between men and women students?	10	4	4
5	It is hoped that a newly developed pain reliever will more quickly produce perceptible reduction in pain to patients after minor surgeries than a standard pain reliever. The standard pain reliever is known to bring relief in an average of 3.5minutes with standard deviation 2.1 minutes. To test whether the new pain reliever works more quickly than the standard one, 50 patients with minor surgeries were given the new pain reliever and their times to relief were recorded. The experiment yielded sample mean 3.1 minutes and sample standard deviation 1.5 minutes. Is there sufficient evidence in the sample to indicate, at the 5% level of significance, that the newly developed pain reliever does deliver perceptible relief more quickly?	10	4	4

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