REG.NO.:

VIT
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

SCHOOL OF ADVANCED SCIENCES
CONTINUOUS ASSESSMENT TEST - II
WINTER SEMESTER 2025-2026

SLOT: B1+TB1

Programme Name & Branch	**: B.Tech**
Course Code and Course Name	**: BMAT202L Probability and Statistics**
Faculty Name(s)	**: Common slot question paper**
Class Number(s)	**: Common slot question paper**
Date of Examination	**:16.3.2026**
Exam Duration	**: 90 minutes**

Maximum Marks: 50

General instruction(s):

- Answer All Questions
- Students are permitted to bring any number of textbooks, printouts of e-books (complete / chapters) and handwritten notebooks (class notes).
- Statistical tables are permitted.
- M - Max mark; CO – Course Outcome; BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)
- Course Outcomes (Type the CO statements covered in this question paper. Use the CO number as per the syllabus copy)
  CO. 2: Understand the basic concepts of random variables and find an appropriate distribution for analyzing data specific to an experiment.
  CO. 3: Apply statistical methods like correlation, regression analysis in analyzing, interpreting experimental data.
  CO. 4: Make appropriate decisions using statistical inference that is the central to experimental research.

Q. No	Question	M	CO	BL
1.	The following data relate to advertisement expenditure (in lakh of rupees) and their corresponding sales (in crores of rupees)	10	3	2

Advertisement expenditure	40	50	38	60	65	50	35	40	45	48
Sales	38	60	55	70	60	48	30	42	50	54

(i) Obtain the two regression lines.
(ii) Estimate the sales corresponding to advertising expenditure of Rs. 30 lakhs.
(iii) Find the correlation coefficient.

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2.	A student takes a true-false examination consisting of 10 questions. He is completely unprepared so he plans to guess each answer. The guesses are to be made at random. For example, he may toss a fair coin and use the outcome to determine his guess. (a) Compute the probability that he guesses correctly at least five times. (b) Compute the probability that he guesses correctly at least 9 times. (c) What is the smallest 'n' that the probability of guessing at-least 'n' correct answers is less than 1/2.	10	2	2
3.	The life span of scientific calculator has a normal distribution with a mean of 58 months and a standard deviation of 10 months. The company gives a warranty of 36 months to replace any defective calculator with a new one. Suppose the company makes 1 million calculators per year, how many calculators may be replaced?	10	2	2
4.	In a sample of 600 students of a certain college 400 are found to use dot pens. In another college, from a sample of 900 students 450 were found to use dot pens. Test whether the two colleges are significantly different with respect to the habit of using dot pens at 1% level of significance.	10	4	1
5.	The mean life time of a sample of 25 fluorescent light bulbs produced by a company is computed to be 1570 hours with a S.D. of 120 hours. The company claims that the average life of the bulbs produced by the company is 1600 hours. Is the claim acceptable 5% level of significance?	10	4	3