

**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**

REG.NO.:

SLOT: G2+TG2

Programme Name & Branch : B.Tech
 Course Code and Course Name : BMAT202L - Probability and Statistics
 Faculty Name(s) : Common Slot QP
 Class Number(s) : Common Slot QP
 Date of Examination : 23.03.2026
 Exam Duration : 90 minutes

Maximum Marks: 50

General instruction(s):

- Answer All Questions
- 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

CO2 - Understand the basic concepts of random variables and find an appropriate distribution for analyzing data specific to an experiment.

CO3 - Apply statistical methods like correlation, regression analysis in analysing, interpreting experimental data.

CO4 - Make appropriate decisions using statistical inference that is the central to experimental research

Q. No	Question	M	CO	BL
1.	The regression line of x on y is given as $0.3545y - x + 2.3060 = 0$; the regression line of y on x is given as $y - 1.261x - 8.705 = 0$; and the regression line of y on z is given as $y - 0.6653z - 8.8024 = 0$. (i) Find the correlation co-efficient between x and y. (ii) If the variance of x is 240.9318, find the standard deviation of y. (iii) If the correlation co-efficient between z and y is 0.5849, find the regression line of z on y.	10	3	2
2.	On average, only 2 out of 80 VIT students are not using ChatGPT for their online quizzes. If the number of VIT students not using ChatGPT for their online quizzes follows a Poisson distribution, find the following: (i) Find the probability that at most 2 students in a G2 slot class of 70 VIT students are not using ChatGPT for their online quizzes. (ii) If there are 10 different G2 slot classes in VIT, each having 70 students, find the probability that at least 8 out of these 10 G2 slot classes have at most 2 students who are not using ChatGPT for their online quizzes.	10	2	3



3.	The weights of cattle are normally distributed with a mean of 120 kg and a standard deviation of 20 kg. The weights of goats are normally distributed with a mean of 35 kg and a standard deviation of 5 kg. (a) Find the probability that the weight of a cattle exceeds 105 kg. (b) Find the probability that the weight of a cattle exceeds 10kg more than three times the weight of a goat.	10	2	3
4.	An egg-producing company claims that not more than 4% of its products are defective. A customer does not believe this claim and takes a random sample of 135 eggs, in which 125 eggs are found to be non-defective. (a) Can we accept the company's claim at the 1% level of significance? (b) Find the minimum level of significance at which the company's claim is rejected.	10	4	2
5.	A random sample of 11 VIT students has the following CAT2 scores 23, 12, 23, 22, 25, 30, 31, 45, 10, 2 and 8. Do these data support the assumption that the average CAT2 score of VIT students is 20.	10	4	2
