



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

SLOT: D2+TD2

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 : 19/03/2025
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 - Analyze, 5 - Evaluate, 6 - Create)
- Course Outcomes (Type the CO statements covered in this question paper. Use the CO number as per the syllabus copy)

CO2: Basic concepts of random variables and find an appropriate distribution for analyzing data specific to an experiment.

CO3: Statistical methods like correlation, regression analysis in analyzing, interpreting experimental data.

CO4: Statistical inference that is the central to the experimental research.

Q. No.	Question	M	CO	BL																				
1.	<p>A departmental store gives an in-service training to its salesmen, which is followed by a test. It is considering whether it should terminate the services of any salesman who does not do well in the test. The following data give test scores and sales made by 9 salesmen during a certain period.</p> <table border="1"> <thead> <tr> <th>Test Scores</th> <td>18</td> <td>23</td> <td>28</td> <td>25</td> <td>30</td> <td>26</td> <td>19</td> <td>24</td> <td>23</td> </tr> <tr> <th>Sales(Rs. '000)</th> <td>51</td> <td>56</td> <td>68</td> <td>57</td> <td>70</td> <td>65</td> <td>53</td> <td>61</td> <td>59</td> </tr> </thead> </table> <p>(i) Obtain the two regression equations (ii) If the firm wants a minimum sales value of Rs. 50,000, what is the test score that will justify the continuous of the services. (iii) Estimate the most probable sales volume of a salesman making a score of 32.</p>	Test Scores	18	23	28	25	30	26	19	24	23	Sales(Rs. '000)	51	56	68	57	70	65	53	61	59	10	3	3
Test Scores	18	23	28	25	30	26	19	24	23															
Sales(Rs. '000)	51	56	68	57	70	65	53	61	59															
2.	<p>An irregular 6 faced dice is thrown thirty times and the number of sixes seen is eight. If the dice is thrown a further twelve times find: (a) the probability that a six will occur exactly twice; (b) the expected number of sixes; (c) the variance of the number of sixes.</p>	5 5	2	2																				
3.	<p>The Vellore Institute of Technology installed 10,000 electric led bulbs in the Vellore campus. If these bulbs have an average life of 1,000 burning hours with a standard deviation of 200 hours, how many bulbs might be expected to fail (i) in the first 800 burning hours? (ii) between 800 and 1200 burning hours? After how many burning hours would you expect (iii) 10% of the bulbs to fail? (iv) 10% of the bulbs to be still burning? Assume that the life of the bulbs is normally distributed.</p>	10	2	3																				



VIT

Vellore Institute of Technology
Approved by the University Grants Commission, UGC, Act 1956.

REG.NO.:

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

SLOT: D2+TD2

4.	A survey claims that 9 out of 10 doctors recommend aspirin for their patients with headaches. To test this claim, a random sample of 100 doctors is obtained. Of these hundred doctors, 82 indicate that they recommend aspirin. Is this claim accurate?	10	4	3
5.	A sample of 100 bulbs of brand A gave a mean lifetime of 1200 hours with a S.D. of 70 hours, while another sample of 120 bulbs of brand B gave a mean lifetime of 1150 hours with S.D. of 85 hours. Can we conclude that brand A bulbs are superior to brand B bulbs?	10	4	3
