

**Programme Name & Branch** : B. Tech  
**Course Code and Course Name** : BMAT202L & Probability and Statistics  
**Faculty Name(s)** : Monica C/Abhishek Das/Neelabja Chatterjee/  
 Kavitha K/Kalaivani K/Yogalakshmi T  
**Class Number(s)** : VL2024250501183 / 1181 / 1184 / 1179 / 1182 / 1185.  
**Date of Examination** : 02/02/2025  
**Exam Duration** : 90 minutes **Maximum Marks: 50**

**General instruction(s):**

- Answer All Questions
- 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)  
 CO1- Compute and interpret descriptive statistics using numerical and graphical techniques.  
 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 analyzing, interpreting experimental data.

No	Question	M	CO	BL																														
1.	Calculate the measures of central tendency for the following frequency table: <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <thead> <tr> <th>Grades</th> <th>No. of students</th> <th>Grades</th> <th>No. of students</th> </tr> </thead> <tbody> <tr> <td>0 -10</td> <td style="text-align: center;">5</td> <td>30 - 40</td> <td style="text-align: center;">22</td> </tr> <tr> <td>10 - 20</td> <td style="text-align: center;">7</td> <td>40 - 50</td> <td style="text-align: center;">30</td> </tr> <tr> <td>20 - 30</td> <td style="text-align: center;">13</td> <td>50 - 60</td> <td style="text-align: center;">38</td> </tr> </tbody> </table>	Grades	No. of students	Grades	No. of students	0 -10	5	30 - 40	22	10 - 20	7	40 - 50	30	20 - 30	13	50 - 60	38	10	1	1														
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2.	Compute the Mean deviation about mean, Quartile deviation, 7 <sup>th</sup> decile and 35 <sup>th</sup> percentile for the following data: <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <thead> <tr> <th></th> <th>0</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> <th>5</th> <th>6</th> <th>7</th> <th>8</th> </tr> </thead> <tbody> <tr> <td>Number of children</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Number of families</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">10</td> <td style="text-align: center;">15</td> <td style="text-align: center;">8</td> <td style="text-align: center;">5</td> <td style="text-align: center;">4</td> <td style="text-align: center;">2</td> <td style="text-align: center;">1</td> </tr> </tbody> </table>		0	1	2	3	4	5	6	7	8	Number of children										Number of families	2	3	10	15	8	5	4	2	1	10	1	2
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3.	Let X and Y be the two random variables whose joint probability mass function is given by $P [ X = x , Y = y ] = k ( x + y )$ where $x = 1, 2, 3$ and $y = 1, 2$ . Find k and marginal probability function of X. Also, obtain the conditional probability distributions of Y given X.	10	2	3																														



REG.NO.:

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

SLOT: G1+TG1

4.	<p>Let X be a continuous random variable with probability density function</p> $f(x) = \begin{cases} 3x^2, & 0 \leq x \leq 1 \\ 0, & \text{other wise} \end{cases}$ <p>Find a such that <math>P[X &lt; a] = P[X &gt; a]</math> and find b such that <math>P[X &gt; b] = 0.05</math>.</p>	10	2	3														
5.	<p>Obtain the correlation coefficient for the following data and give comment on the result.</p> <table border="1" data-bbox="211 871 1183 1050"><tr><td>X</td><td>10</td><td>14</td><td>18</td><td>22</td><td>26</td><td>30</td></tr><tr><td>Y</td><td>18</td><td>12</td><td>24</td><td>6</td><td>30</td><td>36</td></tr></table>	X	10	14	18	22	26	30	Y	18	12	24	6	30	36	10	3	2
X	10	14	18	22	26	30												
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