Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

Mid - Term Examinations – October 2025

Date: 10-10-2025 **Time:** 02.00pm to 03.30pm

School: SOE	**Program:** COMMON TO ALL	
Course Code : MAT3041	**Course Name:** Statistical Reasoning & Data Analysis	
Semester: III/V/VII/IX	**Max Marks**: 50	**Weightage**: 25%

CO - Levels	**CO1**	**CO2**	**CO3**	**CO4**
Marks	**26**	**24**		

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks. **5Q x 2M=10M**

1	The weights of a group of students (in lbs) are as follows: 115, 109, 129, 117, 114, 130, 110, 100, 120, 134, 116, 124. What is the mean body weight of the group?	**2 Marks**	**L2**	**CO1**
2	Find the median for the data set: {7,10,15,18,20,25}	**2 Marks**	**L2**	**CO1**
3	A)A company wants to show the proportion of its total sales that come from different product categories. Which chart would be most effective? B)A researcher wants to visualize the relationship between the number of hours a student studies and their exam score. What kind of plot should they use?	**2 Marks**	**L2**	**CO1**
4	Write down the sample space when two coins are tossed.	**2 Marks**	**L2**	**CO2**
5	A coin is thrown 3 times. What is the probability that at least one head is obtained?	**2 Marks**	**L2**	**CO2**

Part B

Answer the Questions. **Total Marks 40M**

<table>
<tr><td>6.</td><td>a.</td><td>A researcher is conducting a study on the relationship between a person's age, their level of education, and their annual income. For each of these three variables:
a. Classify the data as qualitative or quantitative.
b. Determine whether the quantitative data is discrete or continuous.
c. Identify the most appropriate level of measurement (nominal, ordinal, interval, or ratio).
d. Explain why each level of measurement is the best fit for that variable.</td><td>10 Marks</td><td>L4</td><td>CO1</td></tr>
<tr><td colspan="5">Or</td></tr>
<tr><td>7.</td><td>a.</td><td>Following are the marks obtained by a student A in 10 tests of 100 marks each.

Calculate standard deviation and Variance for the given data set.

<table><tr><td>Test</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><td>Marks obtained by Student</td><td>44</td><td>80</td><td>76</td><td>48</td><td>52</td><td>72</td><td>68</td><td>56</td><td>60</td><td>54</td></tr></table></td><td>10 Marks</td><td>L3</td><td>CO1</td></tr>
<tr><td>8.</td><td>a.</td><td>You are given two datasets representing the daily sales figures (in thousands of dollars) for two different retail stores over a 7-day period:

Store A: {10,12,11,13,10,12,11}

Store B: {5,20,8,15,12,18,10}

Calculate the Interquartile Range (IQR) for both stores.</td><td>10 Marks</td><td>L3</td><td>CO1</td></tr>
<tr><td colspan="5">Or</td></tr>
<tr><td>9.</td><td>a.</td><td>Following are the marks obtained by a student A and B in 10 tests of 100 marks each.

<table><tr><td>Test</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><td>Marks obtained by A</td><td>48</td><td>75</td><td>54</td><td>60</td><td>63</td><td>69</td><td>72</td><td>51</td><td>57</td><td>66</td></tr><tr><td>Marks obtained by B</td><td>35</td><td>70</td><td>50</td><td>65</td><td>52</td><td>89</td><td>54</td><td>50</td><td>45</td><td>65</td></tr></table>
(i) Determine the standard deviation of marks A and B

(ii) Determine which student is more consistent in performance for awarding a prize, who should get the prize?</td><td>10 Marks</td><td>L3</td><td>CO1</td></tr>
</table>

10.	**a.**	Two friends A and B appear for an interview for 2 posts. The probability of A' s selection is 1/6 and that of B' s selection is 2/5. What is the probability that (a) Both are selected? (b) at least one is selected?	**10 Marks**	**L3**	**CO2**
		Or			
11.	**a.**	A town has 2 fire engines operating independently. The probability that a specific engine is available when needed is 0.96. What is the probability that at least one fire engine is available when needed?	**10 Marks**	**L3**	**CO2**

12.	**a.**	A consulting firm rents cars from three agencies such that 20% from agency X, 30% from agency Y and 50% from agency Z. 90% of the cars from X, 80% of the cars from Y and 95% of the cars from Z are in good condition. If a car is in good condition, what is the probability that it has come from (i) agency Y (ii) agency Z?	**10 Marks**	**L3**	**CO2**
		Or			
13.	**a.**	Police plan to enforce speed limits by using radar traps at 3 different locations within the city limits. The radar traps at each of the locations P, Q and R are operated 40%, 30% and 20% of the time. A person who is speeding on her way to work has probabilities of 0.2, 0.1 and 0.5 respectively, of passing through these locations. If the person received a speeding ticket on her way to work, what is the probability that she passed through the radar trap located at (i) location P (ii) location R?	**10 Marks**	**L3**	**CO2**