



PRESIDENCY UNIVERSITY

BENGALURU

Roll No.														
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Mid - Term Examinations JUNE-2025

Date: 02- 06-2025

Time: 09:30 am – 11:00 am

School: SOIS	Program: MCA	
Course Code : MAT3002	Course Name: Applied Statistics	
Semester: II	Max Marks:50	Weightage: 25%

CO - Levels	C01	C02	C03	C04	C05
Marks	36	14			

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	Define Uniform distribution.	2 Marks	L1	C01
2	Write the formula for mean and Standard deviation of the Binomial distribution.	2 Marks	L1	C01
3	Define Joint Probability distribution.	2 Marks	L1	C01
4	Define the term Correlation.	2 Marks	L1	C02
5	Define the term Regression.	2 Marks	L1	C02

Part B

Answer the Questions.

Total Marks 40M

6.	a.	A coin is tossed thrice. A random variable X represents the number of heads turning up. Find the discrete probability distribution for X. Also find its mean, variance and Standard deviation.	10 Marks	L2	CO1																				
Or																									
7.	a.	A random variable X has the following probability mass function	10 Marks	L2	CO1																				
		<table><tr><td>X=x_i</td><td>0</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></tr><tr><td>p(x)</td><td>a</td><td>3a</td><td>5a</td><td>7a</td><td>9a</td><td>11a</td><td>13a</td><td>15a</td><td>17a</td></tr></table>	X=x _i	0	1	2	3	4	5	6	7	8	p(x)	a	3a	5a	7a	9a	11a	13a	15a	17a			
X=x _i	0	1	2	3	4	5	6	7	8																
p(x)	a	3a	5a	7a	9a	11a	13a	15a	17a																

		Determine the value of a, and hence find, (a) $P(X < 3)$ (b) $P(X \geq 3)$ (c) $P(0 < X < 5)$ also find probability distribution of X.			
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8.	a.	Derive Mean and Standard deviation for the Poisson distribution.	10 Marks	L2	C01
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Or

9.	a.	The communication channel receives independent pulses at the rate of 12 pulses per micro second. The probability of transmission error is 0.001 for each micro second compute the probabilities of (i) no error during a micro second (ii) One error per micro second (iii) atleast one error per micro second (iv) two errors (v) atmost two errors.	10 Marks	L2	C01
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10.	a.	In a test on electric bulbs, it was found that the life time of a particular brand was distributed normally with an average life of 2000 hours and S.D of 60 hours. If a firm purchases a 2500 bulbs find the number of bulbs that are likely to last for, (i) More than 2100 hours (ii) less than 1950 hours (ii) between 1900 to 2100 hours. Given : $\phi(1.67) = 0.0475$ and $\phi(0.83) = 0.2967$	10 Marks	L2	C01
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Or

11.	a.	Suppose X and Y are independent random variables with the following respective distribution, <table><tr><td>x_i</td><td>1</td><td>2</td></tr><tr><td>$f(x_i)$</td><td>0.7</td><td>0.3</td></tr></table> <table><tr><td>y_j</td><td>-2</td><td>5</td><td>8</td></tr><tr><td>$f(y_j)$</td><td>0.3</td><td>0.5</td><td>0.2</td></tr></table> Find the joint probability distribution of X and Y. Also verify that $\text{COV}(X,Y) = 0$	x_i	1	2	$f(x_i)$	0.7	0.3	y_j	-2	5	8	$f(y_j)$	0.3	0.5	0.2	10 Marks	L2	C01
x_i	1	2																	
$f(x_i)$	0.7	0.3																	
y_j	-2	5	8																
$f(y_j)$	0.3	0.5	0.2																

12.	a.	Compute the coefficient of correlation for the data given below	10 Marks	L3	CO2																
<table><tr><td>x</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr><tr><td>y</td><td>4</td><td>6</td><td>9</td><td>10</td><td>12</td><td>14</td><td>15</td></tr></table>			x	1	2	3	4	5	6	7	y	4	6	9	10	12	14	15			
x	1	2	3	4	5	6	7														
y	4	6	9	10	12	14	15														

Or

13.	a.	Obtain the lines of regression and hence find the coefficient of correlation for given data	10 Marks	L3	CO2																
<table><tr><td>x</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr><tr><td>y</td><td>3</td><td>5</td><td>8</td><td>9</td><td>11</td><td>13</td><td>14</td></tr></table>			x	0	1	2	3	4	5	6	y	3	5	8	9	11	13	14			
x	0	1	2	3	4	5	6														
y	3	5	8	9	11	13	14														