

ADMISSION NUMBER									

School of Engineering
B.TECH Civil Engineering
Mid Term Examination - May 2024

Duration : 90 Minutes
Max Marks : 50

Sem IV - C1UC421T - Probability and Statistics

General Instructions

Answer to the specific question asked

Draw neat, labelled diagrams wherever necessary

Approved data hand books are allowed subject to verification by the Invigilator

- 1) Define mutually exclusive events and exhaustive events. K2 (2)
- 2) Define sample space and event with example. K1 (3)
- 3) If $P(A)=1/4$, $P(B)=1/2$ and $P(A \cup B)=5/8$ then what is the value of $P(A \cap B)$. K2 (4)
- 4) Find the mean of the given frequency distribution from the following data: K2 (6)

Marks	No. of Students
0-4	3
5-9	5
10-14	7
15-19	4
20-24	6

- 5) State addition and multiplication theorem for probability. K3 (6)
- 6) From the following data compute standard deviation K3 (9)

Class interval	Frequency
0-4	4
4-8	8
8-12	2
12-16	1

- 7) Construct a straight line to the following data by least square method. K4 (8)
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|---|----|---|---|----|---|
| X | 10 | 5 | 8 | 12 | 3 |
| Y | 5 | 7 | 3 | 7 | 6 |

- 8) Find the equations for fitting the straight line K4 (12)

$$Y = A + BX$$

OR

In a bolt factory, three machines M_1 , M_2 , and M_3 manufacture 2000, 2500, and 4000 bolts every day. Of their output 3%, 4%, and 2.5% are defective bolts. One of the bolts is drawn very randomly from a day's production and is found to be defective. What is the probability that it was produced by machine M_2 ? K4 (12)