(i) **Printed Pages : 3** **Roll No. .....**

(ii) **Questions : 10** **Sub. Code :** 2 6 1 7 3

Exam. Code : 0 5 0 1

Master of Commerce 1st Semester

(2124)

QUANTITATIVE METHODS FOR BUSINESS

(Same for CDOE Candidates)

Paper : MC-102

Time Allowed : Three Hours] **[Maximum Marks : 80**

Note :— Attempt any **FIVE** questions but selecting at least **ONE** question from each Unit.

UNIT—I

1. (a) Fit a binomial distribution to the following data :

X	0	1	2	3	4
Y	28	62	46	10	4

8

(b) Explain Binomial Distribution and its properties. 8

2. (a) Between the hours of 2 PM and 4 PM the average number of phone calls per minute coming into a switch board of a company is 2.5. Find the probability that during one particular minute there will be :

(i) no phone call at all

(ii) exactly 3 calls

(iii) at least 2 calls.

(Given $e^{-2} = 0.1353$, $e^{-0.5} = 0.6065$). 8

(b) Discuss Poisson distribution with example. 8

UNIT—II

3. Define sampling and explain methods of probability sampling. 16

4. (a) A population consists of five values : 3, 4, 5, 6 and 7. List all possible samples of size 3 without replacement from this population and calculate the mean $\bar{x}$ of each sample. Verify that sample mean $\bar{x}$ is an unbiased estimate of the population mean. 8

   (b) Distinguish between point estimation and interval estimation. 8

5. Explain the term hypothesis and discuss procedure for hypothesis testing with suitable example. 16

UNIT—III

6. (a) In a sample of 500 persons from a village in Haryana, 280 are found to be rice eaters and the rest wheat eaters. Can we assume that both the food articles are equally popular ? 8

   (b) Explain test of hypothesis about population properties. 8

7. (a) Two salesmen A and B are working in a certain district. From a sample survey conducted by the Head office, the following results were obtained. State whether there is any significance difference in the average sales between the two salesmen :

	A	B
No. of sales	20	18
Average	170	205
Standard devication	20	25

8

   (b) Explain f-test (variance Ratio Test) with example. 8

8. The following figures relate to producing in kg of three varieties A, B and C of wheat sown in 12 plots :

A	14	16	18		
B	14	13	15	22	
C	18	16	19	19	20

Is there any significant difference in the production of these varieties ? 16

UNIT—IV

9. (a) Define Statistical Quality Control and advantages of Statistical Quality Control. 8

(b) A machine is set to deliver packet of a given weight. 10 samples of size 5 each were recorded in the data given below :

Sample No.	1	2	3	4	5	6	7	8	9	10
Mean $\bar{x}$	15	17	15	18	17	14	18	15	17	16
Range	7	7	4	9	8	7	12	4	11	5

Construct the Mean chart and Range chart and comment on state of control. (Conversion factors for n = 5 are $A_2 = .577$, $D_3 = 0$, $D_4 = 2.115$) 8

10. Calculate the Expected Opportunity Loss (EOL) from the following pay off table and hence decide which act is to be selected :

State of nature (Events)	Acts			
	A	B	C	D
S1	50	20	–10	–20
S2	120	50	200	300
S3	200	240	400	350

The probabilities of the states of nature are 0.2, 0.5 and 0.3 respectively. 16