

Exam.Code:0501
Sub. Code: 3802

2012
Master of Commerce
First Semester
MC-102: Quantitative Methods for Business
(Same for USOL candidates)

Time allowed: 3 Hours

Max. Marks: 80

NOTE: Attempt five questions in all, selecting atleast one question from each Unit.

x-x-x

UNIT – I

- I. a) A class consists of 100 students. Out of these 25 are girls and 75 are boys. 10 of them are rich and remaining poor. 20 of them are fair complexioned. What is the probability of selecting a fair complexioned rich girl?
- b) Four cards are drawn without replacement. What is the probability that:-
- i) They are of same suit
 - ii) They are of different suits
- (2x8)
- II. Explain the following:-
- a) Importance of probability in statistics
 - b) Additive and multiplicative rules
 - c) Bayes' theorem
 - d) Independent and dependent events
- (16)
- III. a) What do you mean by Normal Distribution? What are its main properties?
- b) State the conditions under which Binomial distribution tends to normal distribution.
- c) When Poisson distribution tends to be Normal Distribution.
- (8,4,4)

UNIT – II

- IV. a) Describe the important properties of a good estimator.
- b) Point out the importance of sampling in solving business related problems. What are the basic principles on which sampling theory rests?
- (2x8)

P.T.O.

(2)

- V. a) Explain the procedure followed in testing of hypothesis.
 b) A random sample of size 64 has been drawn from a population with standard deviation of 16.
 The mean of the sample is 84. Calculate
 i) 95%
 ii) 99%
 Confidence limits for the population mean. (2x8)

VI. Differentiate between the following:-

- a) Point and interval estimation
 b) Acceptance and rejection region
 c) Null and alternative hypothesis
 d) Large sample and small sample test (16)

UNIT – III

- VII. a) Six boys are chosen at random from a school and their heights are found to be inches:-
 63, 63, 64, 66, 60, 68
 Discuss the suggestion that the mean height in the population is 65 inches (Given the table value of t for 5df at 5% level is 2.57)
 b) Below are given the gain in weight (lbs) of Cowfed on two diets X and Y.

Gain Weight (lbs)										
Diet-X	25	32	30	32	24	14	32	-	-	-
Diet-Y	24	34	22	30	42	31	40	30	32	35

Test at 5% level, whether the two diets differ as regards their effect on mean increase in weight (You are given $t_{0.05(15)} = 2.131$) (2x8)

P.T.O.

(3)

- VIII. To study the performance of three detergents and three different water temperatures, the following whiteness readings were obtained with specified design equipment:-

Water Temperature	Detergent		
	A	B	C
Cold Water	57	55	67
Warm Water	49	52	68
Hot Water	54	46	58

Perform a two-way ANOVA using 5% level of significance.

(You are given $F_{0.05} = 6.94$)

(16)

UNIT – IV

- IX. a) Explain the following terms in the context of SQC:-
- Control limits
 - Tolerance limits
- b) Calculate control limit for the number of defective units and state your conclusion:-
- 15, 9, 12, 19, 4, 9, 26, 14, 15, 17
- (2x8)
- X. a) What do you understand by SQC (Statistical Quality Control). Discuss its need and utility in industry.
- b) What is Control charts? Discuss the utility of control charts in SQC. (2x8)

x-x-x