

GUJARAT TECHNOLOGICAL UNIVERSITY**MBA - SEMESTER-I • EXAMINATION – SUMMER 2013****Subject Code: 810007****Date: 07-06-2013****Subject Name: Quantitative Analysis****Time: 10:30am – 01:30pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

Q.1 (a) Compute the 35th percentile, the 55th percentile, Q_1 , Q_2 and Q_3 for the following data. **07**

16 28 29 13 17 20 11 34 32 27 25 30
19 18 33.

(b) (1) A batch of 50 parts contains six defects. If two parts are drawn randomly one at a time without replacement, what is the probability that both parts are defective? **07**

(2) If this experiment is repeated, with replacement, what is the probability that both parts are defective?

Q.2 (a) Define and explain different techniques of non random sampling. **07**

(b) According to the UN environmental program and WHO, in Mumbai air pollution standards for particular matter are exceeded an average of 5.6 days in every three week period. Assume that the distribution of number of days exceeding the standards per three week period is Poisson distribution. **07**

(1) What is probability that the standard is not exceeded on any day during three week period?

(2) What is probability that the standard is exceeded exactly 6 days of three week period?

OR

(b) A certain business school has 400 students in its MBA program. One hundred sixteen of students are married. Determine by using the binominal distribution. **07**

(1) The probability that exactly 2 of 3 randomly selected students is married.

(2) The probability that exactly 4 of 13 students' chosen at random are married.

Q.3 (a) A large manufacturer investigated the service it received from supplier and discovered that, in the past 32% of all material shipments were received late. However the company recently installed a JIT system in which supplier are linked more closely to the manufacturing process. A random sample of 118 deliveries since the JIT was installed reveals that 22 deliveries were late. Use the sample information to test whether the proportion of late deliveries was reduced significantly. $\alpha = 0.05$ **07**

(b) According to the US bureau of labor statistics the average weekly earning of a production worker in 1997 were \$424.20. Suppose a labor **07**

researcher wants to test to determine whether this figure is still accurate today. He randomly selects 54 production workers across US and obtains sample average for their earning is \$432.69, with standard deviation of \$33.90. Use 5% level of significance and apply all the method to test hypothesis.

OR

Q.3 (a) Define null and alternative hypothesis. List down different steps of hypothesis testing. **07**

(b) Compute a one-way ANOVA on the following data. **07**

1	2	3
2	5	3
1	3	4
3	6	5
3	4	5
2	5	3
1		5

Determine the observed F value. Compare the observed F value with the critical table F value and decide whether to reject the null hypothesis. Use a 5% level of significance.

Q.4 (a) Explain coefficient of determination. **07**

(b) Use a chi-square goodness-of-fit test to determine whether the observed frequencies are distributed the same as the expected frequencies ($\alpha=.05$). **07**

Category	f_0	f_e
1	53	68
2	37	42
3	32	33
4	28	22
5	18	10
6	15	8

OR

Q.4 (a) Write a short note on Multiple regressions. **07**

(b) From the following data, determine the equation of the regression line. **07**

X	12	21	28	08	20
Y	17	15	22	19	24

Q.5 (a) Write a short note on Index numbers. **07**

- (b) Calculate Laspeyres price indexes for 2000-2002 from the following data. Use 1995 as the base year. **07**

	Quantity	Price			
Items	1995	1995	2000	2001	2002
1.	21	0.50	0.67	0.68	0.71
2.	06	1.23	1.85	1.90	1.91
3.	17	0.84	0.75	0.75	0.80
4.	43	0.15	0.21	0.25	0.25

OR

- Q.5** (a) Use the decision table given here to complete parts (1) and (2). **07**

		State of nature			
		S ₁	S ₂	S ₃	S ₄
Decision Alternatives	D ₁	50	70	120	110
	D ₂	80	20	75	100
	D ₃	20	45	30	60
	D ₄	100	85	-30	-20
	D ₅	0	-10	65	80

- (1) Use the maximax criterion to determine which decision alternative to select.
 (2) Use the maximin criterion to determine which decision alternative to select.
- (b) Explain expected value of perfect information in decision making **07**
