Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MBA - SEMESTER–I • EXAMINATION – SUMMER 2013

Subject Code: 2810007 **Date: 07-06-2013**

Subject Name: Quantitative Analysis-I

Time: 10.30 am – 01.30 pm **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 Mean and Standard Deviation from following table. **07**

Class	0-20	20-40	40-60	60-80	80-100
Frequency	32	16	13	10	19

Q:1 (b) WealthKare Ltd. has designed the training program to upgrade the supervisory skills of supervisors. Because the program is self administered, the supervisors require different numbers of hours to complete the program. A study of past participants indicates that the mean length **(μ)** of time spent on the program is 500 hours and that this normally distributed, random variable has a standard deviation of 100 hours. By using the knowledge of **normal distribution** determine probability that a participant selected at random will require training **(1)** Between 500 to 650 hours **(2)** More than 700 hours **(3)** Less than 580 hours **07**

Q:2 (a) Construct a **Histogram and O-gives** chart. **07**

0-20	20-30	30-40	40-50	50-100
13	27	43	31	9

Q:2 (b) Write a detailed note on Sampling Techniques**.** **07**

OR

Q:2 (b) Gujarat Technological University is performing a survey of the annual earnings of last year's graduates from its B-school. It knows from past record that the standard deviation of the annual earning of these graduates is about $1500.How large a **sample size** should the university take in order to estimate the mean annual earnings of last year's class within $500 and at a 95% confidence level? **07**

Q:3 (a) Write a detailed note on Measures of Central Tendency. **07**

Q:3 (b) Write a detailed note on Steps of Hypothesis Testing. **07**

OR

Q:3 (a) If a sample of 25 observations reveals a sample mean of 52 and sample variance of 4.2, test that hypo. That the population mean is 65. **07**

Q:3 (b) A company produces 16 personal computers knowing that 4 of them have defective wiring. The company that purchased the computers is going to test the 3 of the computers. The purchasing company can detect the defective wiring. Use **Hypergeometric distribution** to determine the probability that the purchasing company will find the following? **07**

a. No defective computers b. exactly three defective computers.

Q:4 (a) Mr. X, a brand manager of ABC Ltd. is concerned that his brand's share may be unevenly distributed throughout the country. In a survey in which the country was divided into four geographic regions, a random sampling of 100 consumers in each region was surveyed, with following results. At α = 5%, test whether brand share is the same across the four regions. Use your knowledge of Chi-Square . **07**

Category	East	West	North	South	Total
Purchase the brand	40	55	45	50	190
Do not purchase	60	45	55	50	210
Total	100	100	100	100	400

Q:4 (b) CavinKare Ltd is considering employing one of the two training programs. Two groups were trained for the same task. Group A was trained by Program 1, and Group B was trained by program2. For the group A, the time required to train employees had an average of 62.42 hours and a standard deviation of 0.7497.In the B group, the average was 62.18 hours and the standard deviation was 0.9762. Which training program has less relative variability in its performance? (Hint: CV = Standard Deviation\ Mean) **07**

OR

Q:4 (a) Use of statistics in Business Applications. **07**

Q:4 (b) **1.** Scatter Diagram **OR** Multicollinearity **07**
2. Correlation Analysis

Q:5 (a) The following data shows the number of claims processed per day for a group of three insurance company employees observed for a number of days. Test the hypothesis that the employees' mean claims per day are all same. Compare the observed **F value** with the critical table F value and decide whether to reject the null hypothesis. Use 5% LOS. **14**

Employee 1	2	1	3	3	2	1
Employee 2	5	3	6	4	5	-
Employee 3	3	4	5	5	3	5

OR

Q:5 (a) A public interest group was planning to make a court challenge to auto insurance rates in one of the three cities: A, B, or C. The prob. that it would select A was 0.40, B-0.35, and C is O.25. The group knows that it had a 45%chance of a favorable ruling if it chose A, 60% if it chooses B and 35% if it chose C. If the group did receive favorer able ruling, which city did it most likely choose? Use your Knowledge of Bayes' theorem. **07**

Q:5 (b) Use the following data to determine the equation of the least square regression line. **07**

X	12	21	28	8	20
Y	17	15	22	19	24

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