

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY**MBA - SEMESTER-I • EXAMINATION – WINTER 2013****Subject Code: 810007****Date: 30-12-2013****Subject Name: Quantitative Analysis****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) Construct a Histogram and a Frequency Polygon for the following data. **07**
(Graph paper not required).

Class	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	9	7	10	6	13	18	15

Q:1 (b) Solve the following, by using the binomial tables. **07**

- (a) If $n = 20$, $p = .70$, find $P(x < 12)$
- (b) If $n = 20$, $p = .90$, find $P(x \leq 16)$
- (c) If $n = 15$, $p = .40$, find $P(4 \leq x \leq 9)$
- (d) If $n = 10$, $p = .60$, find $P(x > 7)$

Q:2 (a) In a manufacturing plant, machine A produces 10% of a certain product, machine B produce 40% of this product and machine C produces 50% of this product. 5% of machine A products are defective, 12% of machine B products are defective and 8% of machine C products are defective. Determine the revised probabilities that the sampled product was produced by machine A, machine B and machine C. Apply your knowledge of Bayes theorem. **07**

Q:2 (b) Write a detailed note on Measures of Central Tendency. **07**

OR

(b) Use the following data to determine the equation of the least square regression line, also calculate R-square. **07**

X	5	7	3	16	12	9
Y	8	9	11	27	15	13

Q:3 (a) Suppose a random sample of size 36 is drawn from a population with a mean of 278. If 86% of the time the sample mean is less than 280, what is the population standard deviation? **07**

- (b) A survey was conducted by GTU about hiring procedure. Only 54% of the responding companies review the applicants' college transcript, 44% consider faculty references. 35% of all companies use both the applicants' college transcript and faculty references. **07**
- What is the probability that a randomly selected company uses either faculty references or college transcript?
 - What is the probability that a randomly selected company uses either faculty references or college transcript but not both as a part of the hiring procedures?
 - What is the probability that a randomly selected company uses neither faculty references nor college transcript as a part of the hiring procedures?

OR

- Q:3 (a)** Write a detailed note on Steps of Hypothesis Testing. **07**
- (b)** Calculate Mean and Standard Deviation from the following table. **07**

Class	Frequency
18 - 24	17
24 - 30	22
30 - 36	26
36 - 42	35
42 - 48	33
48 - 54	30
54 - 60	32
60-66	21
66-72	15

- Q:4 (a)** According to the research, average monthly household phone bill is \$ 22. Household phone bills are normally distributed with standard deviation of \$ 4. **07**
- What is the probability that a randomly selected monthly phone bill is more than \$ 17?
 - What is the probability that a randomly selected monthly phone bill is less than \$ 13?
 - What is the probability that a randomly selected monthly phone bill is between \$ 25 and \$ 31?

- (b)** Short note: Sampling Techniques. **07**

OR

- Q:4 (a)** A random sample of size 20 is taken, resulting in a sample mean of 16.45 and a sample standard deviation of 3.59. At level of significance of 0.05, test the hypothesis that $H_0: \mu = 16$ $H_1: \mu \neq 16$. **07**
- (b)** Types of probabilities. **07**

- Q:5 (a)** A management consulting company presents a three day seminar on a project management to various clients. The seminar is presented to high level managers, mid level managers and low level managers. The seminar coordinators believe that evaluations of the seminar may vary with the audience. Use one way ANOVA to determine whether there is a significant differences in the evaluations according to manager level. **14**

High Level	7	7	8	7	9	-	-
Middle Level	8	9	8	10	9	10	8
Low Level	5	6	5	7	4	8	-

- Q:5 (a)** 1. Scatter Diagram. **07**
2. Characteristics of Poisson distribution
- Q:5 (b)** For a test market, find the sample size needed to estimate the true proportion of consumers satisfied with a certain new product within ± 0.04 at the 90% confidence level. **07**
