

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
MBA - SEMESTER-I • EXAMINATION – WINTER • 2014

Subject Code: 810007

Date: 29-12-2014

Subject Name: Quantitative Analysis (QA)

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) Write a short note on level of data measurement. **07**

(b) The radio music listener market is diverse. Listener format might include adult contemporary, album rock, top 40, oldies, rap, country and western, classical, and jazz. In targeting audience, marketers need to be concerned about the ages of the listeners attracted to particular formats. Suppose a market researcher surveyed a sample of 170 listeners of country music radio station and obtained the following age distribution. **07**

Age	Frequency
15-20	9
20-25	16
25-30	27
30-35	44
35-40	42
40-45	23
45-50	7
50-55	2

Q.2 (a) Explain the following terms giving salient features. **07**

- (i) Uniform distribution
- (ii) Bayes' theorem

(b) Suppose the average speeds of passenger a train traveling from Mumbai to Delhi is normally distributed, with a mean average speed of 88 miles per hour and standard deviation of 6.4 miles per hour. **07**

- (a) What is the probability that a train will average less than 70 mile per hour?
- (b) What is the probability that a train will average more than 80 mile per hour?
- (c) What is the probability that a train will average between 90 and 100 mile per hour?

OR

(b) Suppose that every lot of 100 computer chips a company produces, an average of 1.4 is defective. Another buys many lots of these chips at a time, from which one lot is selected randomly and test for defects. If the tested lot contains more than three defects, the buyer will reject all the lots sent in the batch. What is the probability that the buyer will accept the lots? Assume that the defects per lot are poisson distributed. **07**

Q.3 (a) What is random and non-random sampling? **07**

(b) A computer manufacturer estimates that its line of minicomputer has, on average, 8.4 days of down time per year. To test this claim, researcher contacts seven companies that own one of these computers and is allowed to access company computer record. It is determined that, for the sample, the average number of down time is 5.6 with a sample standard deviation of 1.3 days. Assuming that number of down time days is normally distributed and level of significant is 1 %, test to determine whether these minicomputers actually 8.4 days down time in the entire population. **07**

OR

- Q.3 (a)** Explain the following concepts in context to ‘Testing of Hypothesis’ **07**
 (i) Null Hypothesis and Alternative Hypothesis.
 (ii) Type I and Type II error
- (b)** is there a difference in the proportion of the construction workers who are under age 35 years of age and the telephone repair people who are under 35 years age? Suppose a study is conducted in Calgary, Alberta, using random sample of 338 construction workers and 281 telephone repair people. The sample of construction include 297 people under 35 years of age and the sample of telephone repair people include 192 people under that age. Use this data to construct a 90% confidence interval to the difference in proportions of people under 35 years of age among construction workers and telephone repair people. **07**
- Q.4 (a)** Write a note on multiple linear regressions. **07**
(b) From the following data apply one way ANOVA. **07**

Treatment Level		
A	B	C
29	32	25
27	33	24
30	31	24
27	34	25
28	30	26

OR

- Q.4 (a)** Explain the following concepts in context of regression analysis. **07**
 (i) Residual analysis
 (ii) Multicollinearity
- (b)** Use the following contingency table to determine whether variable 1 is independent of variable 2. Assume type I error is 1%. **07**

Variable 1	Variable 2			
	24	13	47	58
	93	59	187	224

- Q.5 (a)** Explain the term ‘Time series’. What are the basic components of a time series? **07**
(b) Calculate Laspeyre’s and Passche’s price index using the following data **07**

	P ₁₉₉₅	Q ₁₉₉₅	P ₂₀₁₃	Q ₂₀₁₃
Eggs (dozen)	0.78	45	1.55	42
Milk (1/2 gal.)	1.14	60	2.25	57
Bananas (per lb.)	0.36	12	0.49	13
Potatoes (per lb)	0.28	55	0.36	52
Sugar (per lb)	0.35	36	0.43	36

OR

- Q.5 (a)** Write a note on Index number. **07**
(b) Using the following data obtain the equation of regression line. **07**

x	y
12	17
21	15
28	22
8	19
20	24
