Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

MBA - SEMESTER–I • EXAMINATION – SUMMER • 2014

Subject Code: 2810007 **Date: 05-06-2014**

Subject Name: Quantitative Analysis - I

Time: 14:30 pm – 17:30 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)** Explain following terms with example/s or line diagram: **07**

1. Business Statistics
2. Nominal level of data
3. Mode
4. Kurtosis
5. Inter-quartile Range
6. Baye's Rule
7. Random Variable

(b) (I) Calculate the arithmetic mean and the median of the frequency distribution given below. Also calculate the mode using empirical relation among the mean , median and mode : **05**

Height (in cm)	No. of students
130-134	05
135-139	15
140-144	28
145-149	24
150-154	17
155-159	10
160-164	01

(II) The following are prices of shares of a company from Monday to Saturday; **02**

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Price (Rs)	200	210	208	160	220	250

Calculate range and coefficient of range.

Q.2 **(a)** A candidate is selected for interview of management trainees for 3 companies. For the first company there are 12 candidates, for the second there are 15 candidates and for the third there are 10 candidates. What are the chances of his getting job at least at one company? **07**

(b) According to Information Resources, which publishes data on market share for various products, Oreos control about 10% of the market for cookie brands. Suppose 20 purchasers of cookies are selected randomly from the population. What is the probability that fewer than four purchasers choose Oreos? **07**

OR

(b) (I) Fill in the blanks; write the most appropriate answer: **04**

1. Probability of Sunday in a given week ……
2. If two events A & B are mutually exclusive P(A∩B)=…….
3. In a Poisson distribution $\mu=100$, find σ =……
4. In a binomial distribution n=100 , p=0.5 , find σ^2 =……

(II) In a survey of 100 readers, it was found 40 read magazine A, 15 read magazine B, and 10 read both. What is the probability of a person reading at least one of the magazines? **03**

Q.3 **(a)** The mean of a binomial distribution is 40 and standard deviation 6. Calculate parameters of binomial distribution. **07**

(b) What do you understand by Normal distribution? Enlist six characteristics of it. **07**

OR

Q.3 **(a)** Suppose a subdivision of "Aadarsh society scam" of Mumbai, Maharashtra, contains 1500 houses. The subdivision was built in year 2009. A sample of 100 houses is selected randomly and evaluated by an appraiser. If the mean of appraised value in this subdivision for all houses is Rs 177000, with a standard deviation of Rs 8,500, what is the probability that the sample average is greater than Rs 185000. (Given for $z > 6$; $p(x)=0.5000$) **07**

(b) Why managers do sampling? Explain Systematic, Cluster and Stratified sampling methods with example/s. **07**

Q.4 **(a)** It is required to test whether the test whether the temperature required to damage a computer on an average is less than 110 degrees. Because of the price of testing, a sample of twenty computers was tested to see what temperature would damage the computer. It was observed that the damaging temperature averaged 109 degrees with a standard deviation of 3 degrees. Use a = 0.01, to test if the damaging temperature is less than 110 degrees? **07**

(b) A company is considering two different TV advertisements for promotion of a new product. Management believes that advertisement A is more effective than advertisement B. Two identical test market areas are selected. A random sample of 60 customers who saw advt. A, 18 tried the product. A random sample of 100 customers who saw advt. B, 22 tried the product. Does this indicate that advertisement A is more effective than advertisement B, if a 5% level of significance is used? **07**

OR

Q.4 **(a)** Compute one way ANOVA for following data: **07**

1	2	3	4
113	120	132	122
121	127	130	118
117	125	129	125
110	129	135	125

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 1% level of significance.

Q.4 **(b)** What is the measure of correlation between the interest rate of federal funds and the commodities futures index? Use the following data: **07**

Day	Interest rate	Futures index
1	7.43	221
2	7.48	222
3	8.00	226
4	7.75	225
5	7.60	224
6	7.63	223
7	7.68	223
8	7.67	226
9	7.59	226
10	8.07	235
11	8.03	233
12	8.00	241

Q.5 **(a)** Explain the following concepts in context to 'Testing of Hypothesis' **07**
(1) Null Hypothesis and Alternative Hypothesis.
(2) Level of Significance and types of error.
(3) Rejection and non-rejection regions.

(b) Use a chi-square goodness-of–fit test to determine whether the observed frequencies are distributed the same as the expected frequencies (level of significance= 0.05) **07**

Category	A	B	C	D	E	F
f_o	53	37	32	28	18	15
f_e	68	42	33	22	10	08

OR

Q.5 **(a)** The following data show the number of claims processed per day for a group of four Life-insurance company employees observed for a No of days. Test the hypothesis that the employees' mean claims per day are all the same. Use level of significance = 0.05 **07**

Employee1	15	17	14	12	------	------
Employee2	12	10	13	17	------	------
Employee3	11	14	13	15	12	------
Employee4	13	12	12	14	10	9

(b) The following table gives the number of aircraft accidents that occurred during the various days of the week. Test the H_0, whether the accidents are uniformly distributed over the week. **07**

Days	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
No of accidents	14	18	12	11	15	14

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