Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MBA. Sem-I Remedial Examination April 2010

Subject code: 810007 **Subject Name: Quantitative Analysis**

Date:10 / 04 / 2010 **Time: 12.00 noon – 02.30 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) Calculate Mean, Median, Mode and Standard Deviation of the date given below: **07**

X	24-34	34-44	44-54	54-64	64-74	74-84	TOTAL
f	10	16	40	24	8	2	100

Is it symmetrical? Why?

(b) 1. Three families have respectively 3 boys and 4 girls, 2 boys and 3 girls, 4 boys and 2 girls. One child is selected at random from each family. Find the probability that the selected group of 3 children will have all girls. **03**

2. Give definitions of Leptokurtic Distribution and Inter Quartile Range. **04**

Q.2 (a) A merchant buys ice-creams at Rs. 5 per cup and sells at Rs. 8 per cup. The stock of the unsold cup/s at the end of the day he has to clear at Rs. 2 per cup. On the basis of past experience, the probability distribution is prepared as under: **07**

Daily sales (cups)	15	16	17	18
Probability	0.1	0.2	0.4	0.3

1. Find 'Expected Monetary Values' (EMVs) of all alternatives and suggest the most profitable alternative on the basis of EMVs.
2. Prepare 'Expected Opportunity Loss' (EOL) matrix and suggest the most profitable alternative on the basis of EOLs.

(b) 1. Write an explanatory note on the tool 'Data Analysis' of Excel. **03**

2. In an industry a managing director is to be appointed from three persons X, Y, and Z. The chance of selection of X is twice than that of Y, while the chance of selection of Y is twice than that of Z. The probabilities that these persons, if selected as managing director will increase the bonus of the workers are respectively 0.2, 0.3 and 0.4. **04**

If the bonus has increased in the industry, find probability that X is selected as managing director.

OR

(b) 1. Calculate 3 years weighted averages using weight 2:1:3 for the given data: **03**

Year	1	2	3	4	5	6	7
Y	10	13	14	12	16	15	18

2. For the undermentioned data, calculate the indices of (1) Laspeyre, (2) Paasche **04**

COMMODITY	BASE YEAR		CURRENT YEAR	
	Price	Total Cost	Quantity	Total Cost
A	5	30	8	80
B	10	50	12	96

Q.3 (a) The following figures relate to the production in K.G. of three varieties A, B and C of capsicum sown in 12 plots. **07**

A	15	17	19	-	-
B	15	14	16	23	-
C	19	17	20	20	21

At 5% level, is there any significant difference in the production of the three varieties?

(b) The mean of a certain production process is known to be 51 with a standard deviation of 2.5. The production manager may welcome any change in mean value towards higher side but would like to safeguard against decreasing value of mean. He takes a sample of 12 items that gives a mean value of 49.5. What inference should the manager take for the production process on the basis of sample results? Use 5% level of significance for the purpose. **07**

OR

Q.3 (a) The mean of a random sample of 1000 units is 17.6 and the mean of another random sample of 800 units is 18. Can it be concluded that both the samples come from the same population with standard deviation (S.D.) = 2.6? **07**

(b) Two independent samples provided the following results: **07**

Sample	Size	Mean	Sum of squares of deviations from their respective means
I	10	12	120
II	12	13	144

Can the two samples be regarded as drawn from the same normal population?

Q.4 (a) 1. In about 70 words, write a note on 'Use of Expected Value in Decision Making'. **03**

2. Write 'Hypergeometirc Distribution' formula and explain its all notations. Write its 5 characteristics. **04**

(b) 1. Give Mean and Standard Deviation of Uniform, Binomial and Poisson distributions. **03**

2. The expenditure on breakfast of customers of a restaurant follow normal distribution with mean Rs. 200 and S.D. Rs. 50. On a particular day 40 customers spent more than Rs. 275, find the expected number of customers visited the restaurant on that day. **04**

OR

Q.4 (a) According to the Association of Insurance Commissioners, the average annual cost for automobile insurance in a state is Rs. 691. Suppose automobile insurance costs are uniformly distributed in the state with a range of from Rs. 200 to Rs. 1,182. What is the standard deviation of the uniform distribution? What is the height of the distribution? What is the probability that a person's annual cost for automobile insurance in the state is between Rs. 410 and Rs. 825? **07**

(b) 1. State advantages of taking a sample instead of conducting a census. **02**

2. The probability that a blade manufactured by a factory is defective is 1/500. Blades are packed in packets of 10 blades. Find the expected number of packets containing (i) no defective blade (ii) one defective blade. **05**

Q.5 (a) 1. State Utility of study of Regression. **02**

2. A departmental store gives in-service training to its salesmen which is followed by a test. It is considering weather it should terminate the services of any salesman who does not do well in the test. The following data gives test scores and sales made by nine salesmen during a certain period: **05**

3.

Test scores (X)	14	19	24	21	26	22	15	20	19
Sales ('00 Rs.) (Y)	31	36	48	37	50	45	33	41	39

If, Mean of X = 20, Mean of Y = 40, S.D. of X = 3.65, S.D. of Y = 6.2 and r = 0.9476,

Does it indicate that the termination of service of low test score is justified?

If the firm wants a minimum sales volume of Rs. 3,000, what is the minimum test score that will ensure continuation of service?

(b) The units produced by a plant are classified into four grades. The past performance of the plant shows that the respective proportions are 8:4:2:1. To check the run of the plant, 600 units were examined and classified as follows. **07**

Grade	First	Second	Third	Fourth	Total
Units	340	130	100	30	600

Is there any evidence of a change in production standards? Use 5% level of significance for the purpose.

OR

Q.5 (a) 1. What is 'Test of Independence'? **02**

2. Write note on: Using the computer for Multiple Regression. **05**

(b) Prove that the undermentioned data is fit for $Y = 3x^2 - 4x + 5$. **07**

X	1	2	3	4	5
Y	4	9	20	37	60

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