First Semester MBA Degree Examination, June/July 2013
Quantitative Methods – I

Time: 3 hrs.   Max. Marks:100

Note: 1. *Answer any THREE questions from Q.No.1 to Q.No.6.*
2. *Q.No.7 and Q.No.8 is compulsory.*

PART – A

1 a. What is a research problem? (03 Marks)
   b. Differentiate between Likert's and Sementic differential scale. (07 Marks)
   c. Briefly explain the methods available under probability and non-probability sampling techniques. (10 Marks)

2 a. What are the different sources of secondary data? (03 Marks)
   b. For the following distribution of 100 families the median is50. Find the unknown frequencies f_1 and f_2. (07 Marks)

Expenditure (Rs)	0-20	20-40	40-60	60-80	80-100
No. of families	14	f_1	26	f_2	18

Using the following data, obtain the two regression lines.

Income (000' Rs)	39	41	33	45	50	37	48	36	31
Expenditure (000' Rs)	19	20	15	22	26	21	24	19	14

Also estimate expenditure for a income of Rs.52,000. (10 Marks)

3 a. What is correlation? (03 Marks)
   b. If on an average one employee in every 10 leave the job within six months of joining. Find the probability that out of 6 employees joining today:
   i) Two will leave the job within six months.
   ii) ii) All with leave the job within six months. (07 Marks)
   c. The retail prices of a commodity at three cities are as follows:

Mumbai	16	8	12	14
Kolkatta	14	10	10	6
Delhi	4	10	8	8

Do these data indicate that the prices are significantly different at 5% significance level?
(Tab $F_{2, 9, 0.05} = 4.26$) (10 Marks)

4 a. What are the various criteria used for classification of written report? (05 Marks)
   b. Explain business research process with the help of a flow chart. (05 Marks)
   c. The following table gives the automobile accidents data occurred in a city. Fit a Poisson distribution. (10 Marks)

No. of accidents:	0	1	2	3	4
No. of units:	21	18	7	3	1

5 a. The average life of 20000 electric bulbs of a company is found to be 2040 hrs with a standard deviation of 60 hrs. Find the number of bulbs that are expected to burn for :
   i)   More than 2150 hrs
   ii) Less than 1960 hrs
   iii) Between 2000 and 2100 hrs (05 Marks)

5 b. A machine produces 16 imperfect products in a sample of 500. After the machine is overhauled, it produces 3 products imperfect in a batch of 100. Has the machine performance increased significantly? ($Z_{0.05}$ = 1.645) **(05 Marks)**

c. From the following data calculate the rank correlation coefficient and comment. **(10 Marks)**

Age:	56	42	36	47	49	42	60	72	36	42
Blood pressure:	147	125	118	128	145	140	155	160	125	128

6 a. The data on the profit (lakhs) earned by 60 companies is given below:

Profit (Rs in lakhs)	Below 10	10-20	20-30	30-40	40-50	Above 50
No. of Companies	5	12	20	16	5	2

Find the three quartiles, 6th decile and 42nd percentile. **(10 Marks)**

b. 2000 students of a college are graded according to their IQ and economic condition.

Economic Condition	IQ Levels		
	High	Medium	Low
Rich	320	600	280
Poor	280	200	320

Test whether there is any association between economic condition and IQ levels. ($\chi^2_{2,0.05}$ = 5.991) **(10 Marks)**

PART – B

7 a. A company has 22 sales executives. They underwent a training programme. The test must evaluate whether the sales performance is unchanged or improved after the training programme. What test is suitable? Explain. **(05 Marks)**

b. Mean, mode and standard deviation of income of employees of factory A in thousands of rupees per month are 40, 60 and 10 respectively. Whereas the figures for factory B employees are 40, 30 and 5 respectively. How would you interpret and compare the two factories? **(05 Marks)**

c. The past profit records are available. Is it possible to forecast future profits? How? **(05 Marks)**

d. A company is considering a proposal to market an emergency lamp in a segment where the company currently does not have any presence. How do you support this firm through research? **(05 Marks)**

PART – C

8 a. Design a questionnaire to study the customer preference towards a branded personal computer. **(10 Marks)**

b. If you are consolidating the research work completed by a researcher, state all the necessary contents required to be present in the research report. **(10 Marks)**

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