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**First Semester MBA Degree Examination, June/July 2015**  
**Quantitative Methods – I**

Time: 3 hrs.

Max. Marks:100

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

- 1 a. Explain standard deviation. (03 Marks)  
b. Explain types of research. (07 Marks)  
c. Discuss the systematic step employed in designing business research process. (10 Marks)
- 2 a. Define the term census? (03 Marks)  
b. Explain the stratified Random sampling. (07 Marks)  
c. Explain various techniques of sampling. (10 Marks)
- 3 a. What is pre testing of questionnaire? (03 Marks)  
b. Describe the steps involved in hypothesis testing. (07 Marks)  
c. For the following data given in table below, calculate the median first quartile and seventh decile.

|                   |       |       |       |       |       |       |
|-------------------|-------|-------|-------|-------|-------|-------|
| Overtime hours :  | 10-15 | 15-20 | 20-25 | 25-30 | 30-35 | 35-40 |
| No. of employee : | 11    | 20    | 35    | 20    | 8     | 6     |

- 4 a. Explain the term interval scale. (03 Marks)  
b. Fit a straight line trend as the method of least square and estimate the arrival in the year 2014 for the data indicated in the below table. (07 Marks)

|                   |      |      |      |      |      |      |      |      |
|-------------------|------|------|------|------|------|------|------|------|
| Year :            | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
| Target arrivals : | 18   | 20   | 25   | 30   | 20   | 28   | 30   | 35   |

- c. The response of TV Viewers are given in the following table. Do this data indicate the relationship between gender and opinion in the population interest?

Given critical value  $X_{0.05}^2 = 5.99$

| Gender | Opinion       |           |               |
|--------|---------------|-----------|---------------|
|        | Entertainment | Education | Waste of time |
| Male   | 52            | 28        | 30            |
| Female | 28            | 12        | 50            |

- 5 a. What are the advantages of secondary data? (03 Marks)  
b. Explain the process of questionnaire designing. (07 Marks)  
c. Find Karl Pearson's coefficient of correlation between sales and expenses of the following ten firms:

|                        |    |    |    |    |    |    |    |    |    |    |
|------------------------|----|----|----|----|----|----|----|----|----|----|
| Firms                  | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 |
| Sales ('000 units)     | 50 | 50 | 55 | 60 | 65 | 65 | 65 | 60 | 60 | 50 |
| Expenses ('000 rupees) | 11 | 13 | 14 | 16 | 16 | 15 | 15 | 14 | 13 | 13 |

- 6 a. Explain type I and Type II error. (03 Marks)  
b. Fit a poisson distribution to the following data and calculate the theoretical frequencies

|     |     |    |    |   |   |
|-----|-----|----|----|---|---|
| x : | 0   | 1  | 2  | 3 | 4 |
| f : | 123 | 59 | 14 | 3 | 1 |

(07 Marks)

- c. Calculate the mean, standard deviation and co-efficient standard deviation from the following table.

|                       |    |    |    |    |     |     |     |     |
|-----------------------|----|----|----|----|-----|-----|-----|-----|
| Age (year) :          | 10 | 20 | 30 | 40 | 50  | 60  | 70  | 80  |
| No of persons dying : | 15 | 30 | 53 | 75 | 100 | 110 | 115 | 125 |

(10 Marks)

- 7 a. Develop a 5 point Likert scale for measuring students attitude towards internet as a source of general information. (05 Marks)
- b. A binomial variable on 100 trials has 6 as its standard deviation. This statement is  
i) valid ii) invalid iii) cannot say. (05 Marks)
- c. The mean weekly sale of the chocolate bar in candy was 146.3 bar per store. After an adult campaign the mean weekly sale in 22 stores for a typical week increased to 153.7 and showed a standard deviation of 17.2. Was the adult campaign successful? (05 Marks)
- d. Explain the circumstance where the following tests are applicable ;  
i) T-test ii) Kruskal walls test. (05 Marks)
- 8 a. A trucking company wishes to test the average life of each of the four brands of tyres. The company uses all brands on randomly selected trucks. The records showing the live (thousand of sales)  $F = 5.56$  at  $\alpha = 0.01$ .

| Brand 1 | Brand 2 | Brand 3 | Brand 4 |
|---------|---------|---------|---------|
| 20      | 19      | 21      | 15      |
| 23      | 15      | 19      | 17      |
| 18      | 17      | 20      | 16      |
| 17      | 20      | 17      | 18      |
|         | 16      | 16      |         |

(10 Marks)

- b. From the following data calculate the rank correlation coefficient after making adjustment for tied ranks.

|   |    |    |    |   |    |    |    |    |    |    |
|---|----|----|----|---|----|----|----|----|----|----|
| x | 48 | 33 | 40 | 9 | 16 | 16 | 65 | 24 | 16 | 57 |
| y | 13 | 13 | 24 | 6 | 15 | 4  | 20 | 9  | 6  | 19 |

(10 Marks)

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