

**LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034**

**M.Com. DEGREE EXAMINATION – COMMERCE**

FIRST SEMESTER – APRIL 2010

**CO 1810 - ADVANCED BUSINESS STATISTICS-I**

Date & Time: 30/04/2010 / 1:00 - 4:00

Dept. No.

Max. : 100 Marks

**SECTION: A**

**Answer All Questions:**

**10 x 2 = 20**

- 1) What is Time Series?
- 2) What is the utility of a mode?
- 3) Distinguish between Schedule and Questionnaire.
- 4) The mean mark of 60 students of a class is 55. Later on it was found that the marks of two students were wrongly entered as 34 and 67 instead of 43 and 76. Calculate the correct arithmetic mean.
- 5) Define Probability?
- 6) Distinguish between Skewness and Kurtosis.
- 7) What is a Type I error?
- 8) Give any two properties of Binomial Distribution?
- 9) Calculate Index Number on the basis of Family Budget Method from the following data.

| Commodity | weight | Price per unit 1995 (Rs) | Price per unit 2005 (Rs) |
|-----------|--------|--------------------------|--------------------------|
| A         | 30     | 27                       | 35                       |
| B         | 20     | 15                       | 30                       |
| C         | 10     | 13                       | 28                       |
| D         | 15     | 11                       | 52                       |
| E         | 25     | 22                       | 60                       |
| F         | 10     | 30                       | 70                       |

- 10) What is ANOVA?

**SECTION – B**

**Answer any Five Only:**

**5 x 8 = 40**

- 11) Write short notes on the following terms
  - (a) Mutually exclusive events
  - (b) Independent and dependent events
  - (c) Equally likely events
  - (d) Complementary events
- 12) What is a Control Chart? Show a typical Control Chart. How are Control Charts for Mean and Range constructed when a Standard is given?

- 13) Find the most likely production corresponding to a rainfall of 40" from the following data:

| Average            | Rainfall | Production |
|--------------------|----------|------------|
|                    | 30"      | 500kg.     |
| Standard Deviation | 5"       | 100 kg.    |

- 14) Calculate the three yearly moving average of the production figures given below:

|             |      |      |      |      |      |      |      |      |      |      |
|-------------|------|------|------|------|------|------|------|------|------|------|
| Year:       | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
| Production: | 15   | 21   | 30   | 36   | 42   | 46   | 50   | 56   | 63   | 70   |
| ( tonnes)   |      |      |      |      |      |      |      |      |      |      |

|             |      |      |      |      |      |
|-------------|------|------|------|------|------|
| Year:       | 2005 | 2006 | 2007 | 2008 | 2009 |
| Production: | 74   | 82   | 90   | 95   | 102  |

( tonnes)

15) A sample of 100 tyres is taken from a lot. The mean life of tyres is found to be 39,350kms with a standard deviation of 3260. Could the sample come from a population with mean life of 40,000 kms? Establish 99% confidence limits within which the mean life of tyres is expected to lie.

16) The following table gives the number of refrigerators sold by 4 salesmen in three months, May, June and July:

| Month | Salesmen |    |    |    |
|-------|----------|----|----|----|
|       | A        | B  | C  | D  |
| MAY   | 50       | 40 | 48 | 39 |
| JUNE  | 46       | 48 | 50 | 45 |
| JULY  | 39       | 44 | 40 | 39 |

Is there a significant difference in the sales made by the four salesmen?  
Is there a significant difference in the sales made during different months?

17) The mean weight of 500 male students in a college is 151 lbs and the standard deviation is 15 lbs. Assuming the weights are normally distributed, find out how many students weigh between 12 and 155 lbs. and b) more than 185 lbs.

18) The score of two batsman A and B in ten innings during a certain season are:

A: 32 28 47 63 71 39 10 60 96 14  
B: 19 31 48 53 67 90 10 62 40 80

Find which of the two batsmen A or B more consistent in scoring, by using coefficient of variation.

### SECTION – C

**Answer any two only:**

**2 x 20 = 40**

19) The following table related to the number of passenger cars ( in million) sold from 2002 to 2009:

|           |      |      |      |      |      |      |      |      |
|-----------|------|------|------|------|------|------|------|------|
| Year:     | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
| Car Sold: | 6.7  | 5.3  | 4.3  | 6.1  | 5.6  | 7.9  | 5.8  | 6.1  |

Fit a straight line trend and estimate the sale of cars in 2012.

20) In an anti malarial campaign in a certain area, quinine was administered to 812 persons out of a total population of 3248. The number of fever cases is shown below:

| Treatment  | Fever | No fever | Total |
|------------|-------|----------|-------|
| Quinine    | 20    | 792      | 812   |
| No quinine | 220   | 2216     | 2436  |
| Total      | 240   | 3008     | 3248  |

21) Obtain the rank correlation coefficient between the variables X and Y from the following pairs of observed values:

X: 50 55 65 50 55 60 50 65 70 75  
Y 110 110 115 125 140 115 130 120 115 160

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