LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Com. DEGREE EXAMINATION - **COMMERCE**

FIRST SEMESTER – **NOVEMBER 2013**

CO 1810 - MODERN BUSINESS STATISTICS

Date : 04/11/2013 Dept. No. Max. : 100 Marks
Time : 1:00 - 4:00

Section: A

Answer All Questions: **10 x 2 = 20**

1) State two practical situations where you will recommend the use of Mode and Harmonic Mean.

2) Distinguish between simple and Multiple Correlation.

3) What is Skewness?

4) Indicate whether the following are True or False:
   i) In a symmetrical distribution, Mean = Median = Mode.
   ii) β_2 is a measure of Kurtosis.

5) What are the components of Time Series?

6) What is standard error?

7) What is meant by theoretical frequency distribution?

8) Four cards are drawn at random from a well shuffled standard pack of 52 playing cards without replacement. What is the probability that they are all kings?

9) What are non parametric tests?

10) Define Type I and Type II errors.

Section – B

Answer any FIVE questions only: **5 x 8 = 40**

11) What is a Control Chart? Show a typical Control Chart. How are Control Charts for Mean and Range constructed when Standard are given?

12) What are the basic conditions for the application of Chi – Square test?

13) Explain the procedure followed in testing a hypothesis.

14) A pharmaceutical company hypothesizes that the effect of a certain sedative is 13 hours with a known standard deviation of 2 hours. From a sample of 16 patients, it is found that the sample mean to be 12 hours. At 1% level of significance, should the company conclude that the average effect of the sedative is less than or equal to 13 hours

15) Calculate the trend values by the method of least squares. Also calculate the monthly increase in sales and trend value for 2014.

Year	2004	2005	2006	2007	2008	2009	2010
Sales (Rs. Lakhs)	125	128	133	135	140	141	143

16) A survey was conducted to study the relationship between expenditure on accommodation X and expenditure on food and entertainment Y and the following results were obtained:

	Mean	Standard Deviation
Expenditure on Accommodation	` 173	` 63.15
Expenditure on food & Entertainment	` 47.8	` 22.98

Coefficient of correlation 0.57

Write down the regression equation and estimate the expenditure on food and entertainment if the expenditure on accommodation is ` 200

17) In an intelligent test administered to 100 students the average score was 52 and standard deviation was 34. Find (a) the number of students exceeding a score of 60 and (b) the number of students scored between 40 and 64.

18) The following data is relating to the units produced per day by 4 workers in 5 machines of different types. Test whether the four workers differ in terms of mean productivity and test whether the mean productivity is the same for the five different machines. Perform Two Way ANOVA.

Workers	**Machine Type**				
	1	**2**	**3**	**4**	**5**
1	10	9	8	12	10
2	11	9	8	12	10
3	13	10	9	10	11
4	14	9	8	12	12

Section – C

Answer any TWO questions only: **2 x 20 = 40**

19) X Ltd is actively considering the following two mutually exclusive projects for adoption.

Project/Year	1st Year	2nd Year	3rd Year	4th Year	5th Year
Project X Cash Profit ` in lacs	10	5	20	40	60
Project Y Cash Profit ` in lacs	5	25	45	30	30

Calculate the co-efficient of variation. Which is the most risky project?

20) Calculate seasonal indices by the ratio to moving average method, from the following data:

Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
2001	68	62	61	63
2002	65	58	66	61
2003	68	63	63	67

21) The following data is collected on two characteristics:

Particulars	Smokers	Non-Smokers	Total
Literate	83	57	140
Illetrate	45	68	113
Total	128	125	253

Use chi-Square to decide that there is no relation between the habit of smoking and literacy.

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