LOYOLA COLLEGE (AUTONOMOUS) CHENNAI – 600 034

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

FIRST SEMESTER – **APRIL 2025**

CO 1810 – MODERN BUSINESS STATISTICS

Date: 23-04-2025 Dept. No. Max. : 100 Marks

Time: 09:00 AM - 12:00 PM

Section – A

Answer **ANY FOUR** of the following: 4 x 10 = 40

1) Define Primary and Secondary Data. Explain their role in surveys with suitable examples.
2) Discuss the importance and advantages of Time Series Analysis in business.
3) Differentiate the following pairs of concepts:
   a) Statistics and Parameter
   b) Null and Alternative Hypothesis
4) Describe the chi-square test of significance and state the various uses to which it can be applied.
5) Calculate the arithmetic mean, median and mode from the following frequency distribution.

Variable	10-13	13-16	16-19	19-22	22-25	25-28	28-31	31-34	34-37	37-40
frequency	8	15	27	51	75	54	36	18	9	7

6) The following data relate to marks in Advanced Accounts and Business Statistics in M.Com first year examinations:
   Mean Marks in Advanced Accounts = 30
   Mean Marks in Business Statistics = 5
   Standard Deviation of Marks in Advanced Accounts = 10
   Standard Deviation of Marks in Business Statistics = 7
   Coefficient of Correlation between the Marks of Advanced Accounts and Business Statistics = 0.8
   Form the two regression equations and calculate the expected marks in Advanced Accounts if the mark secured by a student in Business Statistics is 40.

7) A random sample of 200 tins of coconut oil gave an average weight of 4.95 kg with a standard deviation of 0.21 kg. Do we accept the hypothesis of a net weight of 5 kg per tin at a 1% level?

8) In an efficiency test on vaccine efficacy against infection of COVID-19, the following results were obtained:

	Affected	Not Affected
Inoculated	12	26
Not inoculated	16	6

   Calculate Chi-Square and comment on the effect of the vaccine in controlling COVID-19. (5% value of Chi-square for one degree of freedom = 3.84)

Section - B

Answer **ANY THREE** of the following: 3 x 20 = 60

9) Critically examine the various probability sampling methods.

10) A) Distinguish between regression and correlation.
B) How does regression analysis help in business decision-making?

11) Explain the procedure generally followed in testing a hypothesis.

12) Random samples were taken from the first-generation IT professionals of seven major cities in South India, as stated below. Can it be said that there is a significant variation among first-generation IT professionals in select major cities in the tendency to buy a house?

Cities	A	B	C	D	E	F	G
Independent House	170	285	165	106	153	125	146
Flats	40	125	35	37	55	35	33

(Given for v=6 X^2 0.05 = 12.6)

13) From the prices of shares of X and Y below, find out which is more stable in value:

X	35	54	52	53	56	58	52	50	51	49
Y	108	107	105	105	106	107	104	103	104	101

14) Fit a straight-line trend for the following series. Estimate the value for 2012

Year	2001	2002	2003	2004	2005	2006	2007
Production in million tonnes	60	72	75	65	80	85	95

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