LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.A. DEGREE EXAMINATION – **ECONOMICS**

FIRST SEMESTER – **NOVEMBER 2022**

PEC1MC03 – STATISTICS FOR ECONOMISTS

Date: 25-11-2022 Dept. No. Max. : 100 Marks

Time: 01:00 PM - 04:00 PM

SECTION A

Answer ALL the Questions

1.	**Fill in the blanks**	**(5 x 1 = 5)**	
a)	_____ error is also known as false-positive.	K1	CO1
b)	If the row total is 100, the column total is 50 and the number of samples is 100. Then expected frequency for the cell is _____.	K1	CO1
c)	_____ first order correlation coefficients can be computed using four variables.	K1	CO1
d)	Adjusted R^2 is _____ measure than R^2 when multiple independent variables are used for regression.	K1	CO1
e)	Y in time series consists of _____.	K1	CO1
2.	**State True or False**	**(5 x 1 = 5)**	
a)	Z test can be used when the sample size is 20.	K2	CO1
b)	MM WW MM WWW MMM. r in the observed frequency is 4.	K2	CO1
c)	The correlation coefficient of 0.42 indicates strong correlation.	K2	CO1
d)	A t-test is used to test the significance of regression coefficients.	K2	CO1
e)	Centred Moving Average is used in case of odd period moving average.	K2	CO1

SECTION B

Answer any THREE of the following questions **(3 x 10 = 30)**

3.	A coin was tossed 400 times and the head turned up 216 times. Test the hypothesis that the coin is biased.	K3	CO2
4.	A typing school claims that it can train students to type, on the average, at least 60 words per minute with their course. A random sample of 15 graduates is given a typing test and the median number of words per minute typed by each student is given below. Test the hypothesis that the median typing speed of graduates is at least 60 words per minute.	K3	CO2

Student	A	B	C	D	E	F	G	H
Words/min	81	76	53	71	66	59	88	73
Student	I	J	K	L	M	N	O	
Words/min	80	66	58	70	60	56	55	

5.	Calculate $r_{12.3}$, using $r_{12} = 0.7$, $r_{13} = 0.61$, $r_{23} = 0.4$	K3	CO2

6.	Interpret the treatment available to correct multicollinearity in a time series.	K3	CO2
7.	Fit a trend line in a graph to the following data by the method of semi-averages:	K3	CO2

Year	2011	2012	2013	2014	2015	2016	2017
Sales of Firm (thousand units)	102	105	114	110	108	116	112

SECTION C

Answer any TWO of the following questions **(2 x 12.5 = 25)**

8.	Before an increase in tax on tea 400 people out of a sample of 500 persons were found to be tea drinkers. After an increase in the duty, 400 persons were known to be tea drinkers in a sample of 600 people. Test whether there has been a significant decrease in the consumption of tea after the increase in the excise duty.	K4	CO3
9.	Compute Spearman rank correlation of the student's marks in Science and Mathematics from the following information.	K4	CO3

Science	35	23	47	17	10	43	9	6	28
Maths	30	33	45	23	8	49	12	4	31

10.	Compare and contrast R^2 and Adjusted R^2.	K4	CO3
11.	Compute the 4-period moving average for the revenue collected by A Ltd.	K4	CO3

Year	2012	2013	2014	2015	2016	2017	2018	2019
Revenue	80	82	77	91	85	75	78	81

SECTION D

Answer any ONE of the following questions **(1 x 15 = 15)**

12.	The manufacturer of a specific make of electric bulbs claims that his bulbs have a mean life of 25 months with a standard deviation of 5 months. A random sample of 6 such bulbs gave the following values. Life in months: 24, 26, 30, 20, 20, 18. Test the producer's claim is valid at a 1% significance level. [For $v = 5$, $t_{0.01} = 4.032$]	K5	CO4
13.	Find $r_{12.34}$ using the following information using $r_{12.4} = 0.63$, $r_{13.4} = 0.23$, $r_{23} = 0.12$, $r_{24} = 0.23$ and $r_{34} = 0.32$.	K5	CO4

SECTION E

Answer any ONE of the following questions **(1 x 20 = 20)**

14.	Choose the best estimator among $\alpha = 0.3$ and $\alpha = 0.7$ for the following sales data using exponential smoothing method.	K6	CO5

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
Forecast								
Actual	105	110	107	112	117	109	108	-

15.	Summarize the procedure for testing the Hypothesis.	K6	CO5