

M.A./M.Sc. 4th Semester Examination, 2024**ECONOMICS***(Computer Applications in Economics)**(Computer Practical)***PAPER—ECO-492***Full Marks : 50**Time : 3 hours*Answer any **five** questions*The figures in the right hand margin indicate marks*

1. (a) The temperatures (in Fahrenheit) of two cities, Kolkata and Delhi for six months are given in the table below. Using the necessary test statistics in MS Excel, determine whether the temperatures in these two cities are significantly different.

Month	January	February	March	April	May	June
Kolkata	65	45	32	47	55	65
Delhi	56	52	47	48	50	72

- (b) GDP at Current Price of India is given below. Estimate the trend growth rate of nominal GDP. 5 + 5

Year	2010	2011	2012	2013	2014	2015	2016	2017
GDP (\$Trillion)	1.7	1.8	1.8	1.9	2.0	2.1	2.3	2.7
	Year			2018	2019	2020	2021	2022
	GDP (\$Trillion)			2.7	2.8	2.7	3.2	3.4

2. Using the data provided below estimate both linear and log-linear models for the demand for roses using the STATA package. Interpret the estimated results of the models. 5 + 5

Demand for rose (q_r)	Price of rose (P_r)	Price of carnation (P_c)	Income(M)
115	23	35	158
93	25	29	173
84	31	41	165
101	29	36	173

Demand for rose (q_r)	Price of rose (P_x)	Price of carnation (P_y)	Income(M)
92	27	32	179
89	28	37	199
62	36	38	186
83	32	35	189
80	26	31	181
75	29	32	183
59	38	37	182
80	36	36	185
61	28	29	184
59	30	31	188
32	42	36	176
59	37	35	188

3. Using the data provided in Question 2, apply the following post-estimation techniques to
- (a) Test the normality of the estimated residuals using the Z-skew, Z-kurt, Shapiro-Wilk and Jarque-Bera (JB) tests.

(b) Assess multicollinearity using the Variance Inflation Factor (VIF).

(c) Evaluate heteroscedasticity using the Breusch-Pagan (BP) test. $5 + 2 + 3$

4. The yield rates of 24 farmers using three different types of fertilizer are provided below. Perform a one-way ANOVA using SPSS to analyze the data and interpret the results. Determine which fertilizer is most effective in increasing the yield rate. $5 + 5$

Fertilizer Type	1	1	1	1	1	1	1	1	2	2	2	2
Yield Rate	177	177	176	177	176	176	176	175	176	177	176	176
Fertilizer Type	2	2	2	2	3	3	3	3	3	3	3	3
Yield Rate	177	177	177	178	177	177	177	177	176	177	178	178

5. (a) Write a Program in C for converting Centigrade to Fahrenheit.

(b) Write a program in C to find the A.M. and S.D. of the following numbers :

2, 5, 10, 21, 25, 31, 39, 42, 45, 50

$3 + 7$

6. A researcher wants to understand the factors affecting the choice of one of two brands of a product. The researcher collects data from 30 people on the variables given below. Fit a logit model and estimate it using SPSS. Interpret the results. 10

Individual No.	Asset holding (Rs. Lakhs)	Income (Rs. thousands per month)	Gender (1 = Male, 0 = Female)	Choice of the Brand
1	2.36	22	0	B
2	2.59	24	0	B
3	2.98	26	0	B
4	2.62	14	0	B
5	3.70	23	0	A
6	2.56	19	0	B
7	2.46	19	0	B
8	2.57	23	0	B
9	2.73	27	0	B
10	3.62	31	0	A
11	2.33	22	0	B
12	3.02	25	0	B
13	3.27	25	0	B

Individual No.	Asset holding (Rs. Lakhs)	Income (Rs. thousands per month)	Gender (1 = Male, 0 = Female)	Choice of the Brand
14	2.96	27	0	A
15	3.23	28	0	B
16	2.44	21	0	B
17	2.45	27	0	B
18	2.53	21	0	B
19	2.82	25	1	B
20	2.86	27	1	A
21	1.76	24	1	B
22	3.32	30	1	A
23	2.59	16	1	B
24	3.21	28	1	B
25	3.24	26	1	A
26	2.53	29	1	A
27	3.09	19	1	A
28	2.37	26	1	B
29	3.35	23	1	A
30	3.70	25	1	A

7. Perform the Augmented Dickey Fuller Unit Root Test using Eviews for the GDP series

given below. Write down the steps and explain the results.

7 + 3

Year	GDP	Year	GDP
1950	2939.37	1969	6127.87
1951	3025.99	1970	6443.89
1952	3105.44	1971	6549.76
1953	3296.43	1972	6513.52
1954	3455.03	1973	6728.18
1955	3566.84	1974	6807.93
1956	3765.82	1975	7430.85
1957	3750.33	1976	7554.43
1958	4027.49	1977	8102.49
1959	4133.2	1978	8565.34
1960	4360.37	1979	8116.68
1961	4522.7	1980	8663.4
1962	4655.27	1981	9183.74
1963	4934.32	1982	9502.94
1964	5302.07	1983	10195.6
			10585.1
1965	5162.32	1984	5
			11141.3
1966	5159.46	1985	3
1967	5563.24		
1968	5751.72		

8. Using the following data, estimate the regression equation of Y on X using Eviews software. Write down the steps and interpret the result.

7 + 3

Year	Y	X
1991	1578	82
1992	1317	69
1993	3567	68
1994	3723	52
1995	5580	35
1996	1759	45
1997	1807	29
1998	2859	45
1999	2590	39
2000	2406	55
2001	2537	52
2002	1488	30
2003	1305	56
2004	3455	58

Year	Y	X
2005	4009	59
2006	5018	32
2007	2894	57
2008	1782	19
2009	2043	79
2010	1851	56
2011	3927	27
2012	2407	32
2013	1856	30
2014	2112	38
2015	2554	18
