

2025

M.Sc. 1st Semester Examination

ECONOMICS

Paper : ECOC404X8

(Data Analytics and Research Methodology)

(Practical)

Full Marks : 25

Time : One and Half Hour

*The figures in the margin indicate full marks.
Candidates are required to give their answers
in their own words as far as practicable.*

Answer any five questions : 5×5=25

1. (a) Install any two libraries to analyse the data in R.
(b) Generate a scatter plot of CM versus FLR from the 'Data for FAT' data frame using base R plotting function. (Use CM sheet of Excel data file "Data for FAT"). 2+3 [CO3]
2. (a) Import the dataset from an Excel file with the sheet CM into a data frame "Data for FAT". Print the first six rows to confirm the data load and display the summary statistics and structure of the dataset.
(b) Create a correlation matrix for the variables FLR,

P.T.O.

PCI, and TFR and interpret the results briefly (Use CM sheet of Excel data file "Data for FAT").

2+3 [CO4]

3. For the dataset containing CM, FLR, TFR and PCI, fit a multiple linear regression model with CM as the dependent variable and interpret the results. Check for multicollinearity using VIF (Variance Inflation Factor) and address any issues found. 5 [CO4]
4. Write Python code to fit a simple linear regression model using scikit-learn, taking LABOUR as predictor and OUTPUT as response. Explain the results. (Use "output" sheet of MS Excel Data File "Data for FAT"). 5 [CO4]
5. From the following data, draw the Correlogram and explain the result. Check the stationarity of the series using the "Dickey-Fuller" test and explain the results. If the series turns non-stationary, then transform the series into stationarity and recheck stationarity.

Data on GDP for India

Year	GDP	Year	GDP	Year	GDP
1960	63,108	1977	147,368	1994	322,203
1961	65,549	1978	155,781	1995	346,591
1962	67,602	1979	147,621	1996	372,784
1963	71,846	1980	157,577	1997	387,899
1964	77,189	1981	167,030	1998	411,923
1965	93,877	1982	172,819	1999	442,353
1966	93,843	1983	185,433	2000	460,182
1967	101,193	1984	192,523	2001	484,189

(3)

Year	GDP	Year	GDP	Year	GDP
1968	104,607	1985	202,600	2002	502,428
1969	111,447	1986	212,260	2003	544,486
1970	117,192	1987	220,660	2004	589,559
1971	119,103	1988	241,926	2005	644,500
1972	118,449	1989	256,323	2006	704,256
1973	122,380	1990	270,495	2007	773,393
1974	123,830	1991	273,372	2008	811,540
1975	135,157	1992	288,353	2009	885,430
1976	137,395	1993	302,101	2010	963,405

5 [CO4]

6. What are the steps to be followed using Eviews to find out Covariance between the following series, X and Y?

Y	X	Y	X
1578	82	3455	58
1317	69	4009	59
3567	68	5018	32
3723	52	2894	57
5580	35	1782	19
1759	45	2043	79
1807	29	1851	56
2859	45	3927	27
2590	39	2407	32
2406	55	1856	30
2537	52	2112	38
1488	30	2554	18
1305	56		

5 [CO4]

P.T.O.

7. From the following annual income data of 35 individuals, check using Eviews whether their mean annual income is statistically different from Rs. 6 lakh or not.

Individual	Income (in Rs.)	Individual	Income (in Rs.)
1	14880	19	198557
2	17085	20	244278
3	22919	21	331190
4	26517	22	374629
5	28956	23	437134
6	30067	24	578337
7	33885	25	677326
8	35721	26	748946
9	40651	27	974588
10	51024	28	832787
11	68207	29	986527
12	63479	30	1143837
13	71371	31	1225649
14	77765	32	1477246
15	96991	33	1735222
16	112403	34	2309124
17	132801	35	2504176
18	146407		

5 [CO4]

8. Using the following data, write the steps involved to find out the linear trend of the GDP series using Eviews software. Interpret the result.

(5)

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
1965	5162.32	1984	10585.15
1966	5159.46	1985	11141.33
1967	5563.24		
1968	5751.72		

4+1 [CO4]

