JAIPURIA
INSTITUTE OF MANAGEMENT
LUCKNOW NOIDA JAIPUR INDORE

JAIPURIA INSTITUTE OF MANAGEMENT, NOIDA

PGDM / PGDM (M) / PGDM (SM)

IVth TRIMESTER (Batch_2021)

Reappear -END TERM EXAMINATIONS

Course Name	Business Forecasting		Course Code	OM401
Max. Time	**2 hours**		Max. Marks	**40 MM**

INSTRUCTIONS: Open Book Exam
Attempt all questions   Each question carries 20 marks
Solve the questions in eviews software and attempt the questions asked below each datasets provided in table.

1. The table below lists the indexed productivity (X) and real wage rate (Y) for two sectors of the economy for 1959–1997.

Year	Productivity in sector A	Productivity in sector B	Wage rate in sector A	Wage rate in sector B
1959	50.5	54.2	13.1	13.7
1960	51.4	54.8	13.7	14.3
1961	53.2	56.6	14.2	14.8
1962	55.7	59.2	14.8	15.4
1963	57.9	61.2	15.4	15.9
1964	60.6	63.8	16.2	16.7
1965	62.7	65.8	16.8	17.2
1966	65.2	68.0	17.9	18.2
1967	66.6	69.2	18.9	19.3
1968	68.9	71.6	20.5	20.8
1969	69.2	71.7	21.9	22.2
1970	70.6	72.7	23.6	23.8
1971	73.6	75.7	25.1	25.4
1972	76.0	78.3	26.7	27.0
1973	78.4	80.7	29.0	29.2
1974	77.1	79.4	31.8	32.1
1975	79.8	81.6	35.1	35.3
1976	82.5	84.5	38.2	38.4
1977	84.0	85.8	41.2	41.5
1978	84.9	87.0	44.9	45.2
1979	84.5	86.3	49.2	49.5
1980	84.2	86.0	54.5	54.8
1981	85.8	87.0	59.6	60.2

a. Plot wage rate against productivity for the two sectors separately. (3 marks)
b. Estimate the OLS regression of wage rate against productivity in each of the sectors. Interpret the results. (6 marks)
c. Would you reject the hypothesis that productivity has no effect on earnings in both sectors? (3 marks)
d. Are the two models correctly explain the changes in wage rate? Defend your answer? (4 marks)
e. Test for autocorrelation, If present, correct for autocorrelation in the models. (4 marks)

2. Table 2 gives data on average salary (in dollars) of public school teachers in 50 states and the District of Columbia for the year 1985. These 51 areas are classified into three geographical regions: (1) Northeast and North Central (21 states in all), (2) South (17 states in all), and (3) West (13 states in all)

Table 2 AVERAGE SALARY OF PUBLIC SCHOOL TEACHERS, BY STATE, 1985

Salary	Spending	D2	D3
19583	3346	1	0
20263	3114	1	0
20325	3554	1	0
26800	4642	1	0
29470	4669	1	0
26610	4888	1	0
30678	5710	1	0
27170	5536	1	0
25853	4168	1	0
24500	3547	1	0
24274	3159	1	0
27170	3621	1	0
30168	3782	1	0
26525	4247	1	0
27360	3982	1	0
21690	3568	1	0
21974	3155	1	0
20816	3059	1	0
18095	2967	1	0
20939	3285	1	0
22644	3914	1	0
24624	4517	0	1
27186	4349	0	1
33990	5020	0	1
23382	3594	0	1
20627	2821	0	1
22795	3366	0	1
21570	2920	0	1
22080	2980	0	1
22250	3731	0	1
20940	2853	0	1
21800	2533	0	1
22934	2729	0	1
18443	2305	0	1
19538	2642	0	1
20460	3124	0	1
21419	2752	0	1
25160	3429	0	1
22482	3947	0	0
20969	2509	0	0
27224	5440	0	0
25892	4042	0	0
22644	3402	0	0
24640	2829	0	0
22341	2297	0	0
25610	2932	0	0

26015	3705	0	0
25788	4123	0	0
29132	3608	0	0
41480	8349	0	0
25845	3766	0	0

Where D2 = 1 for states in the Northeast and North Central; 0 otherwise.
D3 = 1 for states in the South; 0 otherwise.
Source: National Educational Association, as reported by Albuquerque Tribune, Nov. 7, 1986.

X= salary of public school teacher
Y= Spending

a) Explain the reason why did we not use three dummies to distinguish the three regions? (3 marks)
b) The category for which no dummy variable is assigned is known as the base, or the benchmark. Comment. (3marks)
c) Write the equation to run the regression model including regional dummies. (2marks)
d) Apply OLS regression and interpret the model (6 marks)
e) Is the model facing problem of multi-collinearity? Justify. (4marks)
f) Write the equation if we want to consider all the dummies in the model. (2marks)