4. (a) Consider the following demand and supply model :

$$D = b_0 + b_1P + U$$

$$S = a_0 + a_1P + V$$

$$D = S$$

Show that both equations are under identified.

(b) Explain 2-SLS estimation.

(c) Derive the reduced form of the following structural form :

$$C_t = a_0 + a_1Y_t + u_1$$

$$I_t = b_0 + b_1Y_t + b_2Y_{t-1} + u_2$$

$$Y_t = C_t + I_t + G_t$$

where C_t, I_t, Y_t are endogenous variables and G_t and Y_{t-1} are predetermined variables.

(d) Write down the rules of identification.

OR

(e) Explain the concept of 3-SLS.

(f) Discuss the problems of identification in simultaneous equation models.

(g) How do you estimate an over-identified equation ?

(h) Write a note on spurious regression.

5. State the random effects approach for estimation of panel data.

OR

Why panel data techniques are used in Economics ? Explain special features of panel data.

M.A. (Part—II) Examination

Group—B

ECONOMICS

Paper—V

(Econometrics—II)

Time—Three Hours] [Maximum Marks—100

Note :— (1) Attempt all **FIVE** questions.

(2) All questions carry equal marks.

1. What is ANOVA ? How is it applied in regression analysis ?

OR

Given the following data :

$$\Sigma x_1 = 50,\ \Sigma x_1^2 = 340,\ \Sigma x_1 y = 319$$

$$\Sigma x_2 = 36,\ \Sigma x_2^2 = 204,\ \Sigma x_2 y = 225$$

$$\Sigma y = 49,\ \Sigma y^2 = 303,\ \Sigma x_1 x_2 = 245$$

$$n = 9$$

Answer the following questions :

(a) Estimate the regression line

$$\hat{y} = \alpha + \hat{\beta}_1 x_1 + \hat{\beta}_2 x_2 .$$

(b) Find standard error of α, β_1 and β_2.

(c) Find out adjusted R^{-2}.

2. (a) Find out whether O.L.S. error terms in the following table are auto-correlated. Estimate the value of ρ.

Year	Error terms
1960	3.2
1961	0.2
1962	0.8
1963	2.23
1964	–1.45
1965	–1.14

(b) What is heteroscadasticity ?

(c) What do you mean by dummy variable ?

(d) What is the problem of multicollinearity ?

OR

(e) Explain the meaning of piecewise linear regression.

(f) Explain the consequences of autocorrelation.

(g) Explain the Gold-Feld-Qandt test for heteroscadasticity.

(h) What precaution should be taken in the use of dummy variables ?

3. (a) Explain partial adjustment model.

(b) State the method of Instrumental Variables.

(c) What is the role of lag in Economics ?

(d) Compute error terms and apply 'd' test :

Y	X
9	1
8	2
10	3
12	4
11	5
13	6
14	7
16	8

OR

(e) Explain Koyek's lag model.

(f) Explain the relationship between auto-regression and distributed lag model.

(g) Distinguish between adaptive expectation and partial adjustment model.

(h) From the following data estimate the co-efficient of autocorrelation :

et : 1.8, 0.8, 0.6, –0.2, –1.6, 1.3, 0.3.