

Bachelor of Arts Examination 2017
(2nd year, 3rd semester)
Economics (Honours)
Mathematical Economics—II

Time: 2 Hours

Full Marks: 30

Answer any three questions: 3X10

- 1) For a three commodity market model given as (all the variables have their usual meanings)

$$D_1(P_1, P_2; Y_0) = S_1(P_1) \quad D_1'(P_1) < 0, \quad D_1'(P_2) < 0, \quad S_1'(P_1) > 0$$

$$D_2(P_2, P_3; Y_0) = S_2(P_2) \quad D_2'(P_2) < 0, \quad D_2'(P_3) > 0, \quad S_2'(P_2) > 0$$

$$D_3(P_1, P_3; Y_0) = S_3(P_3) \quad D_3'(P_1) > 0, \quad D_3'(P_3) < 0, \quad S_3'(P_3) > 0$$

Find the direction of change in equilibrium P_1 , if.

a) $D_1'(Y_0) > 0, \quad D_2'(Y_0) > 0, \quad D_3'(Y_0) > 0$

b) $D_1'(Y_0) > 0, \quad D_2'(Y_0) > 0, \quad D_3'(Y_0) < 0.$

- 2) For a model depicting the relationship between inflation and unemployment given as (all the variables have their usual meanings)

$$P = \alpha - \beta U + g\pi - t^2 \quad \alpha, \beta > 0, \quad 0 < g \leq 1$$

$$\pi' = j(p - \pi) \quad 0 < j \leq 1$$

$$U' = -k(m - p) \quad k > 0$$

Analyse the nature and stability of the time path for π .

- 3) For a market model given as (all the variables have their usual meanings)

$$Q_t^d = \alpha - \beta P_t \quad \alpha, \beta > 0$$

$$Q_t^s = -\gamma + \delta P_t \quad \gamma, \delta > 0$$

$$\Delta P_t = j(Q_t^d - Q_t^s) \quad j > 0$$

Find out the time path for p and analyse its nature. What will happen if j becomes negative?

- 4) For an income determination model it is given that aggregate demand comprise of three components—consumption, investment and government expenditure equal to the aggregate supply in equilibrium. Consumption is directly proportional to the income of the previous period, investment is directly proportional to the change in consumption of the previous period ($I_t = \alpha(C_t - C_{t-1})$) and government expenditure is exogenous. Does income have a stable time path? Analyse its nature.

- 5) Solve and infer about stability for the given input-output model, quantitatively:

$$X_1' = -.8X_1 + .6X_2 + 7$$

$$X_2' = .7X_1 - .8X_2 + 9$$

Infer about the stability using qualitative analysis.