

BACHELOR OF ARTS EXAMINATION, 2019

(1st Year, 2nd Semester, Old)

ECONOMICS (Honours)**MATHEMATICAL ECONOMICS II****(2016 SYLLABUS)**

Time : Two hours

Full Marks : 30

Answer any three questions: 10X3

- 1) For an input-output model given as (all the variables have their usual meanings)
- $$0.2 X_1 + 0.2 X_2 + 0.5 X_3 + 3 = X_1$$
- $$0.5 X_1 + 0.4 X_3 + 4 = X_2$$
- $$0.2 X_1 + 0.6 X_2 + 0.1 X_3 + 2 = X_3$$
- Find out the equilibrium output levels. 10
- 2) For a macro-economic model (all the variables have their usual meanings), product market equations are
- $$Y = C + I + G$$
- $$C = 62 + 0.7 Y$$
- $$I = K - 100 i$$
- while for the money market it is
- $$M_0 = 0.25 Y - 200 i$$
- Find out how the equilibrium values of the variables involved in the model (Y, C, I, i) be changed with the change in the values of G, K and M_0 . 10
- 3) For a market model given as (all the variables have their usual meanings):
- $$Q_{dt} = \alpha - \beta P_t \quad (\alpha, \beta > 0)$$
- $$Q_{st} = -\gamma + \delta P_t \quad (\gamma, \delta > 0)$$
- price is adjusted according to following formula:
- $$P_{t+1} = P_t - \sigma (Q_{st} - Q_{dt}) \quad (\sigma > 0)$$
- Use qualitative analysis to find out the characteristics of the time path of price for different permissible values of the parameters. 10
- 4) For a model depicting the relationship between inflation and unemployment given as (all the variables have their usual meanings)
- $$P = \alpha - \beta U + g \pi \quad (\alpha, \beta > 0, 0 < g \leq 1)$$
- $$d\pi/dt = j (p - \pi) \quad (0 < j \leq 1)$$
- $$dU/dt = -k (m - p) \quad (k > 0)$$
- Find out the time path for π and analyse its nature. 10
- 5) Solve the following differential equation to find out the time path of y:
- $$dy/dt + u(t) y = w(t) \quad 10$$