M.A. Examination, 2022

Semester-IV

Economics

Course: OP-16 (Optional)

(Modern Growth Theory)

Time: 3 Hours **Full marks: 40**

Questions are of value as indicated in the margin.

Answer **any four** from the following questions

1. Consider a version of Solow model with the standard assumptions: constant population growth rate, $\frac{\dot{L}(t)}{L(t)} = n > 0$; and the constant saving rate, $s(t) = sY(t)$, $s \in (0,1)$. The only difference with the standard Solow model is that the production function, $Y(t) = F(K(t), L(t))$, satisfies the property of diminishing returns to scale.

(a) Write down the time path of labour, $L(t)$.

(b) Derive the intensive from of production function, $y(t) = f(k(t))$, where $y(t) = \frac{Y(t)}{L(t)}$, and $k(t) = \frac{K(t)}{L(t)}$.

(c) Using the time path of, $L(t)$, and the intensive form production function, $y(t) = f(k(t))$, derive the expression for the capital accumulation equation, $\frac{\dot{k}(t)}{k(t)}$.

(d) Explain the possibility of the existence of a steady-state equilibrium for this formulation of the Solow model.

1+2+3+4

2. In the Solow model, how does the saving rate affect the steady state level of capital? How can one determine optimal level of savings rate in this case?

3+7

3. What is the difference between Endogenous Technical Progress and Exogenous Technical Progress? Explain different types of Exogenous Technical Progress. Which type of Exogenous Technical Progress is consistent with stability of steady state? Explain in detail.

2+3+5

4. Consider a two country Solow model with perfect international capital mobility and analyse the stability problem of the long run equilibrium.

10

5. In which way Lucas (1988) model come into the category of endogenous growth model? What will be consequences in an otherwise Lucas (1988) model if rate of human capital accumulation depends on household income share of education?

2+8

6. What will be the impact of introduction of durable public goods in place of perishable public good in Barro (1990) model?

10

7. Show in the context of Arrow Model (1962) that competitive market equilibrium is Pareto inefficient.

10

8. Consider an Overlapping Generations Model where every generation lives for two periods, earns in the first period (when young), consumes out of the income saved in the second period (when old) and then dies without leaving any bequest. Find the Equilibrium, Steady State and the Golden Rule levels of Capital in this economy and show that the Steady State and Golden Rule levels may differ (you may assume a logarithmic utility function and Cobb-Douglas production function).

2+3+5