MASTER OF ARTS EXAMINATION, 2023

(1st Year, 2nd Semester)

ECONOMICS

[ADVANCED MACROECONOMICS]

Time : Two Hours   Full Marks : 30

Answer *any three* of the following

1. a) Does knowledge generate external effect in Romer (1993) model?

    b) Why could not Romer assume perfect competition in all the sectors in this model?

    c) Does any sector earn positive profit in this model? If so, how much (derive)? does this profit go to the products of that sector?

    d) According to Romer (1990) model, if two counries are engaged in trade, do they, always benefit from trade?   1+3+4+2=10

2. a) Is Ramsay Cass Koopman's model of growth an endogenous growth model? justify your answer.

    b) How was Lucas (1988) successful in endogenizing the growth rate ? Is the assumption of external effects emanating from human capital necessary for having endogenous growth rate?

    c) How are competitive equilibrium and command outcome different in Lucas (1998) model? Why are they different? Write your answer by specifying the basic model, Hamiltonian, control variables and state variables (You do not have to derive the growth rate by solving the Hamiltonian).

    d) What is the policy implication of l LLucas (1988) model ?   2+3+4+1

3. Consider a standard Over Lapping Generation model with utility function $U(c_y^t, c_{t+1}^0) = l\,n(c_t^y) + \beta c_{t+1}^0$ and production function $Y_t = K_t^\alpha N_t^{1-\alpha}$ where c_t^y is the per capita young age consuption, c_{t+1}^0 is the per capita old age consumption, K_t is the physical capital, N_t is the labour service provided by the labour force. Capital does not depreciate. Wage over young age consumption is saved. Savings along with the interest income on savings is the old age consumption.

    a) Solve the household's optimisation problem given prices.

    b) Find out steady state capital labour ratio.

    c) Is the steady state unique and stable?

    d) If $\alpha = 0.3$, $\beta = 0.9$ find the population growth rate for which the economy is dynamically inefficient.   2+3+3+2

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4. Consider Ramsey model with utility function $U = \int_0^\infty \left(\frac{c_t^{1-\theta} - 1}{1-\theta} \right) e^{-pt} dt$, where c_t is the

    per capita consumption. Suppose the production function of the final output is
    $Y_t = AK_t^\alpha N_t^{1-\alpha} + BK$. Population grows at a constant rate n. Suppose government of
    this economy imposes tax on wage income (τ_L) and uses the tax revenue for giving
    lumpsum subsidy (z_t) to each household. Disposable income over consumption is
    invested as physical capital.

    a) Write down the budget constraint, Hamiltonian. Derive first order conditions along
        with the traversality condition.

    b) Find the steady state equilibrium growth rate of per capita consumption, steady state
        consumption level and steady state physical capital stock.

    c) What is the impact of tax on per capita consumption, per capita capital stock and
        growth rate (show diagrammatically)?

    d) Is the growth rate exogenous or endogenous?   3+3+3+1