

SEM 4: MACRO

PRACTICE SET 1

1. Consider the production function $Y = K^{0.5}L^{0.5}$ and $\delta = 10\%$, $n = 20\%$ and $mpc = 0.8$.
 - (i) Calculate steady state value of per capita output
 - (ii) Find out the saving rate and capital labour ratio where the consumption per capita is maximised.
2. Consider Solow Model with technical progress and prove each of the following statements
 - (i) The capital-output ratio is constant
 - (ii) The share of labour in national income is constant
 - (iii) Real rental price is constant but real wage grows at the rate of technological progress
 - (iv) Total capital income and total labour income both grow at the rate $n+g$.
3. Suppose an economy consumes all wage income and saves all capital income. Show that if factors of production earn their marginal product then the economy reaches the Golden Rule level of capital.
4. Consider the following information for an economy having Cobb-Douglas Production Function:
Capital share of GDP = 30%
Average growth in output is 3 % per year
Depreciation rate = 4% per year
Capital-output ratio = 2.5
 - (i) Find out the saving rate to reach steady state
 - (ii) What must be the saving rate to reach the Golden Rule steady state?
 - (iii) Find the capital-output ratio at the Golden Rule steady state.
5. According to the Solow Model, _____ is a function of capital.
6. The Solow Model implies that countries with small initial capital stocks should grow rapidly. This implies that:
 - (a) poorer countries should eventually “catch-up” to richer countries (conditional convergence)
 - (b) poorer countries are bound to experience explosive growth which will propel their economic output far beyond that of rich countries
 - (c) the growth rates between rich and poor countries is bound to diverge
7. State the relationship between *the golden rule* and *dynamic efficiency* in the Solow model.

8. India's GDP increased from \$997.5 billion in 1999 to \$1,076.9 billion in 2000. Calculate the growth rate of India's GDP in 2000.
9. India's real GDP per capita (PPP, 1985 constant prices) increased from \$564 in 1960 to \$2,374 in 1996. Calculate the average annual growth rate of India's real GDP per capita over the period 1960-1996.
10. India's real GDP per capita (PPP) grew at an average annual rate of 2.00% from 1960 through 1996, increasing from \$769 to \$1,546. Assuming India's GDP per capita continues growing at this average rate from 1996 through 2046, what will India's real GDP per capita equal in 2046?