<u>Anser Key to Problem set#3</u>
<u>Econ 333</u>
<u>Professor Lakshmi K. Raut</u>
<u>1</u>

(a) Assumptions:

(A.1) Assume that labor is abundant and is not binding in the production of national output or income only capital is binding. The aggregate output Y_t produced at time t is a fixed proportion *v* of the total capital stock K_t, at time t, i.e.,

(1) $Y_t = v\,K_t$, for all t = 0, 1, 2, … (notice that the output-capital ratio *v* does not change over time)

(A.2) Assume that the society or the whole economy's total savings S_t at time is a fraction *s* of the total income K_t at time t, (this is also known as Keynesian savings function), i.e., in notation,

(2) $S_t = sY_t$, for all t = 0, 1, 2, … (notice that the savings rate s does not change over time)

(A.3) Assume that the economy under consideration is a closed economy, so that all the investment I_t during a period t comes out of total domestic savings, i.e., in notation

(3) $I_t = S_t$

Derivation: Note that

g_Y = discrete growth rate of total income between period t and t+1

$= \dfrac{Y_{t+1} - Y_t}{Y_t} = \dfrac{vK_{t+1} - vK_t}{Y_t}$ (substituting Equation (1) for period t and t+1 in the numerator)

$= \dfrac{v\left[K_{t+1} - K_t\right]}{Y_t} = \dfrac{vI_t}{Y_t}$ (since $K_{t+1} = K_t + I_t$, i.e., total capital in period *t+1*is the capital stock in period t plus the investment during period t)

$= v\dfrac{S_t}{Y_t} = v \cdot s$ (by the Keynesian savings behavior assumed in A.2)

The above is exactly what was to be shown.

Q2. v = $\dfrac{g_Y}{s}$ = 0.04 / 0.20 = 1/5

if desired g_Y is 0.06, from s = g_Y /v , desired s = 0.06 * 5 = 0.3 (or 30%)

Ways to increase the saving rate include:

1) lowering income taxes, since S = s (Y-T)
2) increasing sales taxes (make consumption costly)
3) raise interest rates
4) capital gain tax breaks
5) improve tax collection, reduce government spending (increase govt. savings)

Q3. Strengths:
1) highlights the importance of savings or investment and capital accumulation
2) easy to understand, and gives clear policy prescriptions

Weaknesses:
1) lack of empirical support, high savings rate doesn't always to lead to high growth
2) too narrow a view of growth: ignored labor, technology and substitution of inputs.

concerns only with capital

3) ignores diminishing returns to capital. Unrealistic production function.