Econ 333-09: Economic Development: Fall 2000
Professor L.K. Raut
Mid-term Exam
Time Duration: 2 Hours.

Please write your answers on the exam itself, and for multiple choices, put tick-mark(s) in the [ ] corresponding to your choice of correct answer(s).

Your name ————————————————————, Student ID # ————————————

1. (15 points) What are the main assumptions in Lewis model? Explain the main improvements that Lewis model features as compared to Harrod-Domar model as a model of economic development (*economic development in the sense we have discussed in previous classes*)? Give a graphical exposition of the Lewis model, and explain the concepts of ”labor surplus”, and ”labor absorption process” in the manufacturing sector using the Lewis model. In the Lewis model, how does an underdeveloped economy become industrialized? What is the role of agricultural sector in this development process? What are the main criticisms of this model as a model of economic development?

scratch

2. (Answer these questions very precisely and clearly in the space provided below):

   (a) (10 points) What are the common characteristics of the less developed countries and how do they differ from the industrialized countries?

(b) (5 points) Comment on the following: *The essence of the argument that per capita income and growth rates can be misleading indicators of development is that these measures ignore the distribution of income.*

(c) (10 points) Using your answer above explain what are the main goals of development economics. (In answering this question, clearly explain what is meant by economic development, and why do we need a separate discipline such as Development Economics).

3. Recall that an economic variable V (this could be total income, money in the bank or population or something else) is growing exponentially or continuously at the rate of r per year starting from a value of V_0 at time $t = 0$, if $V(t)$, the value of this economic variable at time t is given by

$$V(t) = V_0 e^{rt} \text{ for all } t$$

Using the above formula answer the following: Suppose in 1994 India has per capita income of \$320 and growing exponentially at the rate of 2.9% per year and US has per capita income of \$25,880 and growing exponentially at the rate of 1.3% per year.

(a) (5 points) When in future India will overtake US in terms of per capita income?

[ ] Year 2025
[ ] Year 2096
[ ] Year 2130
[ ] Year 2210
[ ] Year 2269

(b) (5 points) When in future India will have more than the US 1994 level of per capita income?

[ ] Year 2050
[ ] Year 2096
[ ] Year 2110
[ ] Year 2130
[ ] Year 2146

(c) (5 points) The years it will take India to double up its per capita income is?

[ ] 8.89 years
[ ] 7.55 years
[ ] 23.90 years
[ ] 30.32 years
[ ] Never doubles up

(d) (5 points) The years it will take the US to double up its per capita income is?

[ ] 28.81 years
[ ] 40.45 years
[ ] 53.32 years
[ ] 60.39 years
[ ] Never doubles up

(e) (5 points) Suppose the exponential growth rate of population in India is 2.1% per year, and its exponential growth rate of total income is 5% per year, then the per capita income of India is growing exponentially at the rate of

[ ] 7.10%
[ ] 2.90%
[ ] 2.38%
[ ] 2.72%
[ ] None of the above, and the correct answer is _____

4. Show your computations in the table. Keep up to 4-digits before you round-off. No partial credits for wrong answers. The following is the National Income Statistics of a country called Imagineme.

Year	GNP	Labor	Capital	Wages	Rental
1996	296.5	161.7	231.2	195.690	100.810
1997	310.8	164.3	240.2	208.236	102.564
1998	330.1	166.9	270.3	214.565	115.535
1999	348.8	175.6	285.4	219.744	129.056

(a) (10 points) Calculate the annual average growth rates of GNP (r_Y), labor (r_L), and capital (r_K) and the average share of labor income (η_{FL}) and share of capital income (η_{FK}) during 1996-1999.

$r_Y =$ _____ $r_L =$ _____ $r_K =$ _____

$\eta_{FL} =$ _____ $\eta_{FK} =$ _____

(b) Suppose during 1996-1999, the country Imagineme's exponential annual growth rates of GNP, labor and capital are respectively 5.56%, 2.80% and 7.34%, and the average shares of labor income and capital income in national income are respectively .652 and .348. Suppose, GNP at time t is given by the production function $Y(t) = A(t)F(K(t), L(t))$. Recall the growth accounting formula:

$$r_Y = r_A + \eta_{FL} \cdot r_L + \eta_{FK} \cdot r_K$$

where, η_{FK} and η_{FL} are respectively the rental income share and labor income share of GNP

(i) (5 points)

Growth in total factor productivity (TFP)

[ ] 1.1801%
[ ] 1.24784%
[ ] 0.01302%
[ ] 0.00001%
none of the above, the correct answer is _____

(ii) (5 points)

The contribution of growth in capital to growth in income

[ ] 2.55430%
[ ] 3.17724%
[ ] 0.02302%
[ ] 0.00103%
none of the above, the correct answer is _

(iii) (5 points)

The major source of growth in income is

[ ] growth in capital
[ ] growth in labor
[ ] growth in total factor productivity growth
none of the above, the correct answer is _____

(iv) (10 points) Another country Competeme is currently about at the same level of development as Imagineme, but has been growing its GNP at a faster rate of 7.56 % per year. The country Competeme has the the total factor productivity growth rate of 1.18%, contribution of growth in labor as 3.83% and the contribution of growth in capital as 2.55%. In the light of higher growth performance of Competeme, you would like identify a source of growth to focus your policies on. Is it growth in capital, labor or total factor productivity? Suggest at least three government policies that will achive higher growth in the factor that you identify.