Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Economics of Development

Spring 2017 Exam One

Total exam is worth 30 points. Each question is worth three points. Each sub-question is worth an equal share of the three points for that question.

1. Growth models
   1. Contrast the functional form of the Solow model with that of the Romer model.

* 1. Describe the nature of the spillover proposed by the Romer model and explain how this particular specification can explain a failure to find unconditional convergence.
  2. What part of the Solow model does the Romer model endogenize? How?

1. Big Push Model.

Output

The x-axis is labor in one of N sectors of the economy measured in hundreds and all N sectors are in the situation represented in the figure. 600 workers are currently employed in this one sector using traditional technology, and they make 600 units, where output is measured in hundreds as well. Each worker is paid 1 per unit of work and each unit of output produced sells for 1 in the traditional sector. The line with the diamond markers is the traditional revenue, cost, and production function. The double line with triangles is the modern revenue and production function. It costs the equivalent of 300 workers to bring in the modern technology, but each worker is more productive with the modern technology than the traditional technology. Possible cost curves reflecting different wages in the modern sector are represented by the dashed lines.

1. Will coordination be needed to have all N sectors in the economy modernize if the modern wage is represented by modern wage 1? Why or why not?

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1. Will coordination be needed to have all N sectors of the economy modernize if the modern wage is represented by modern wage 2? Why or why not?
2. What is the nature of the spillover benefit to the other N-1 sectors of the economy of the sector represented in the figure modernizing?

1. Exchange Rates
   1. Illustrate on a supply and demand graph (supply and demand for foreign currency, price in domestic currency) an overvalued currency.
   2. If this currency is devalued, will the prices of exports from the country increase or decrease in world markets? Why?
2. Growth models
3. How do you increase the growth rate of an economy according to the Harrod Domar model?
4. Illustrate using graphs how Solow contrasts income growth from technological innovation with that which results from an increased savings rate.
5. Circle to indicate whether the statement is true or false.

|  |  |
| --- | --- |
| **Statement** | **Is the statement True or False?** |
| The Harrod Domar model specifies diminishing marginal returns to capital in the production of output. | True or False |
| Sen identifies one of the main themes of the first generation of development economics the importance of mobilization of underemployed labor. | True or False |
| Neutral technological progress changes the marginal rate of technical substitution for a given input bundle on an isoquant. | True or False |
| According to the theory of comparative advantage, every country has to have a comparative advantage in the production of at least one commodity. | True or False |
| Developing countries are defined as being in the lower and middle-income groups using the World Bank Atlas measure of GNI per capita. | True or False |
| Romer’s model specifies Decreasing Returns to Scale in the input bundle. | True or False |
| Solow designed his model to explain the cross country evidence suggesting there is ‘conditional convergence’ across countries in income per capita over time. | True or False |
| A dynamic model is needed when choices made today influence the  choice set available in the future | True or False |

1. Define:
   1. The Human Development Index.
   2. The ‘Prebish-Singer hypothesis’.
   3. Purchasing Power Parity Currency Conversion.
   4. The Commodity Terms of Trade.
2. Kaskazini workers can produce 4 units of rice per unit of labor and 8 units of beans per unit of labor. Neighboring Kusini workers can produce 8 units of rice and 20 units of beans per unit of labor.
   1. Write out the production functions for each good in each of the two countries with units of output as a function of units of labor (y=f(L) takes what form for each product in each country).

|  |  |  |
| --- | --- | --- |
|  | Rice | Beans |
| Kaskazini |  |  |
| Kusini |  |  |

* 1. Identify the product in which each country has a comparative advantage and explain why this is the product in which they have a comparative advantage.
  2. If there are 100 laborers in Kaskazini and 100 in Kusini, describe the level of production of each commodity in each country in autarky if each country divides up their labor force with half of the work force allocated to each commodity.

|  |  |  |
| --- | --- | --- |
|  | Rice | Beans |
| Kaskazini |  |  |
| Kusini |  |  |
| TOTAL |  |  |

* 1. Illustrate by moving 20 of Kaskazini’s workers and 9 of Kusini’s workers to the commodity for which they have comparative advantage how it is possible to increase total production of the two goods without using any new resources.

|  |  |  |
| --- | --- | --- |
|  | Rice | Beans |
| Kaskazini |  |  |
| Kusini |  |  |
| NEW TOTAL |  |  |

* 1. Illustrate how Kaskazini and Kusini can both be better off than they were in autarky if they trade 75 units of rice for 175 units of beans.

|  |  |  |
| --- | --- | --- |
|  | Rice | Beans |
| Kaskazini |  |  |
| Kusini |  |  |
| NEW TOTAL |  |  |

1. There are four workers in the economy who differ in their labor quality as defined by their ‘q’ value. Q is defined on a scale of [0,1] with higher q being higher quality. Worker one has q=1, worker two has q=0.8, worker three has q=0.6, and worker four is q=0.4. Production takes place using two workers, with output of combining workers i and j defined by . There are three ways we can arrange the workers, A, B, and C.

a) Fill in the following

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Arrangement | Pair One | Resulting output 1 | Pair Two | Resulting output 2 | Total output (1+2) |
| A | (1, 0.8) |  | (0.6, 0.4) |  |  |
| B | (1, 0.6) |  | (0.8, 0.4) |  |  |
| C | (1, 0.4) |  | (0.8, 0.6) |  |  |

Say production can be increased by paying for training that will increase the q of a given worker. The cost of this training, c, can be expressed in terms of output y. Training that costs c raises the skills of a worker as represented by a 0.1 increase in their q value. As you may recall from class, training will be given to the lower q worker in a given pair so you can just focus on that.

1. What is the maximum cost c a firm would be willing to pay for the training that will increase the skill level of the 0.8 worker in a (1, 0.8) pairing as measured by output y?
2. What is the maximum cost c a firm would be willing to pay for the training that will increase the skill level of the 0.4 worker in a (0.6, 0.4) pairing as measured by output y?
3. Contrast your answers to (b) and (c) to illustrate why the O-ring theory can be used to explain a lack of ‘convergence’.
4. International Issues
   1. Describe the role of capital flight in ‘the debt crisis’.
   2. What is an import substitution industrialization strategy?

10) Consider the following set of figures taken from the textbook and answer the questions below.



1. What is the name usually given to this model?
2. What qualitative change in the economy of a country is this model designed to describe?

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1. How does the model describe the economic forces that lead to the increase in the capital stock from KM1 to KM2
2. Provide an example of one assumption of the Lewis model that you find questionable if this model is applied to reality.