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

Spring 2010 Exam 1

Total quiz is 30 points. Each question is worth three points. Each sub question is worth an equal share of these three points.

1. Circle to indicate whether the statement is true or false.

|  |  |
| --- | --- |
| **Statement** | **Is the statement True or False?** |
| The Harrod Domar model assumes there are 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 contention that structural adjustment and poverty reduction are complementary objectives. | True or False |
| Neutral technological progress leaves unchanged the marginal rate of technical substitution for a given input bundle, but changes the amount of output produced using that input bundle. | True or False |
| According to the theory of comparative advantage, every country has to have an absolute advantage in the production of at least one commodity. | True or False |
| The ‘Prebisch-Singer’ hypothesis is based on the argument that the income elasticity of demand for manufactured goods is higher than the income elasticity of demand for primary products. | True or False |
| A ‘steady state’ outcome in a dynamic model is a type of equilibrium that is characterized by there being no force internal to the model that leads to further change in the state variables. | 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 |
| The value of exports of goods and services is a component of the capital account. | True or False |

1. Growth theories.
	1. Using the notation on this graph, use the space below the graph to describe the contrast Solow drew between growth from technological progress and growth from increased savings. In the graph, k is capital per worker on the x axis, output per worker is defined as $y=∝k^{β}$ on the y axis with α capturing technological knowledge and β the share of national income controlled by owners of capital, n is population growth rate, δ is the depreciation rate, and s is the savings rate.

Growth from technological progress is represented on this graph in what way?

Growth from a higher savings rate is represented on this graph in what way?

* 1. Explain using the notation on the graph and your answer to part (a) Solow’s argument about what could and what could not explain long run growth in income per capita over time in an economy (in terms of the model you are explaining what could lead to constant growth in y over time).

3) Match the model / theory to the assumption or implication.

|  |  |  |  |
| --- | --- | --- | --- |
| Model |  | Write the number of the model | Assumption or implication |
| 1) O – Ring |  | Technological progress is treated as a variable to be explained, rather than a fact exogenous to the model. |
| 2) Romer growth |  | Profits obtained in the manufacturing sector will be reinvested in this sector, thus increasing capital stocks and generating more employment. |
| 3) Lewis Model |  | Coordination may be needed to assure that industrialization will occur across multiple sectors of the economy for certain wage rates. |
| 4) Big Push |  | Higher quality workers will choose to work with other higher quality workers, leaving lower quality workers to work together. |
| 5) Harrod-Domar |  | Primary product exporting economies will experience unfavorable changes in their commodity terms of trade over time due income elasticities of demand. |
| 6) Comparative Advantage |  | The marginal propensity to save is a critical determinant of the growth in national income over time. |
| 7) Infant industry |  | Well being can be improved by specialization and trade without using any new resources. |
| 8) Prebish – Singer |  | Tariff protection will be needed to allow the domestic industry to develop forward and backward linkages, thus becoming more efficient over time. |

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=0.7, worker three has q=0.5, and worker four is q=0.2. Production takes place using two workers, with output of combining workers i and j defined by .

a) Fill in the following

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Combination 1 | Resulting output 1 | Combination 2 | Resulting output 2 | Total ouput (1+2) |
| (1, 0.7) |  | (0.5, 0.2) |  |  |
| (1, 0.5) |  | (0.7, 0.2) |  |  |
| (1, 0.2) |  | (0.7, 0.5) |  |  |

1. 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 0.15 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.
2. If the cost of training is below what level of c will a firm decide to pay for increasing the skill level of the 0.7 worker in a (1, 0.7) pairing?
3. If the cost of training is 0.1 does it make sense to train the q=0.2 person in the (0.5, 0.2) pair if the training raises the skills of this worker by 0.15 to 0.35? Why or why not?
4. Contrast your answers to (i) and (ii) to illustrate why the O-ring theory can be used to explain a lack of ‘convergence’.
5. Consider the following set of figures taken from the textbook and answer the questions below.
6. What is the name usually given to this model?
7. What qualitative change in the economy of a country is this model designed to describe?
8. How does the model describe the economic forces that lead to the increase in the capital stock from KM1 to KM2?

6) A ruler of a city state can offer security to a merchant. The ruler can protect the merchant from being robbed at cost 1. The merchant has goods that cost him 1 to obtain and transport to the city state if he decides to come. If they are sold in the city state, they generate a profit of 5.

If the merchant comes with goods that generate a profit of 5 (sales revenue of 6-cost of 1), the ruler gets 2, the merchant gets 3. The ruler nets 1 after paying the security cost.

If the merchant does not come and no security costs are incurred, the ruler and the merchant get zero.

If the merchant comes and the ruler does not provide security, the ruler and his mob will split the profit after the merchant is robbed. The ruler gets 2 ½. The merchant suffers a loss of 1.

If the ruler pays for protection but the merchant does not come, the ruler pays the cost of protection, but gets no benefits, so suffers a loss of -1.

This can be summarized in the following table.

|  |  |
| --- | --- |
|  | Merchant |
| Come | Don’t Come |
| Ruler | Protect | 1 3 | -1 0 |
| Don’t protect | 2 ½ -1 | 0 0 |

1. Describe the best response strategies in this game and identify the Nash equilibrium outcome.
2. Does this model illustrate how a failure to coordinate actions leads to a sub-optimal outcome? If so, why. If not, why not?
3. Exchange rates.
	1. Illustrate on a supply and demand for foreign currency graph the impact of an overvalued official exchange rate.
	2. In a country with an overvalued official exchange rate, are importers or exporters in the country likely to be harmed by the exchange rate policy? Explain briefly.

 8) Illustrate the following:

1. Place a tariff on the imported commodity such that the selling price with the tariff included is 4. Show the level of domestic supply, the level of international supply, and the tax revenue generated. Y axis is price, x axis is quantity.



1. Illustrate on the production function the impact of technological progress, with output on the y-axis and the input on the x-axis.



9) Define:

* 1. The Human Development Index.
	2. Dumping.
	3. An “import substitution industrialization” strategy.
	4. Transfer pricing.
1. More models.
	1. Identify the model associated with this figure and define F, L, N and W.



* 1. In the figure above, is coordination across sectors needed to allow for adoption of the modern technology in this sector? Why or why not.
	2. Describe the nature of the positive externality that the firm in figure (a) generates for the other N-1 firms in the economy if it modernizes and pays the modern wage rate.