BIRLA INSTITUTE OF TECHNOLOGY & SCIENCE, PILANI
FIRST SEMESTER 2015-16

MID SEMESTER TEST (REGULAR)

ECON F313: ISSUES IN ECONOMIC DEVELOPMENT **DATE: 10 Oct 2015**
MAX MARKS: 30 **TIME: 90 min**

NOTE:

- **Closed book examination. Attempt all questions. Start answering each question on a fresh page. Read the question carefully and** Try to keep your answers brief and to the point. **Write legibly. Allocate your time carefully:** some students spend too much time on the straight and short answer questions and write unnecessary material. Remember that long answers by themselves do not have any value.

1) Discuss the validity of the following statements. In your answer define or explain as precisely as possible any terms or concepts which are underlined, with particular reference to the context in which they are being used. Be brief but you should include diagrams and/or real-world examples where appropriate.

   A). Growth in per capita GNP is an adequate measure of economic progress.
   B). If two countries have the same level of income but different rates of investment, then according to Solow model the two countries will have the same income and growth.
   C). The relative growth rates of the richest countries in the world are consistent with the notion of unconditional convergence that is predicted by the Solow Growth Model.

(4.0)

2) An economy adopts a hybrid Harrod-Domar-Solow model of growth and has a population of 2 million, current capital stock of $6 billion, and a current GDP of $3 billion. The savings rate is a constant 8% and depreciation rate is 3%. The population growth rate is 0.
   Its production function is given by: $Y_t = A_t K_t$., where Y_t denotes GDP, K_t denotes capital stock and A_t denotes productivity of capital in year t.
   Capital productivity will remain at its current level until the economy achieves a per capita income of $2000. Between per capita income of $2000 and $3000, capital productivity will be at a constant level, which will be 10% lower than what it is currently, owing to some natural resource (energy) constraints. Between per capita income of $3000 and $4000, capital productivity will also be at a constant level, which will be 10% lower what it would be between per capita income of $2000 and $3000. And so on: for every successive range of per capita income of a thousand dollars, capital productivity will be (constant at a level which is) 10% lower what it was for the previous range.

   Compute the current and future growth rates of per capita income per capita income and how will they differ? What will the growth rate and level of per capita income be in the long run?

(4.0)

3) Read the following situations and issues of coordination problems and answer the associated questions.
   A). **International Debt**: Suppose that a country considers default on its international debt to a creditor country. In case of default, the creditor country can stop trade with the defaulter, even though this action may be costly for the creditor country to do. Hence, the more potential defaulting countries there are, the more difficult it becomes for the creditor country to "punish" a defaulter. Show that how this situation gives rise to a coordination problem among the defaulters and briefly describe the possible equilibria?
   B). **Cities**: Think of the emergence of cities as an outcome of coordination games. What would we mean by multiple equilibria in this context? Briefly discuss this answer with respect to the concentration of certain types of industries in certain locations: for example, computer companies in Silicon Valley

(4.0)

4) Consider a hypothetical economy in which each worker has to decide whether to acquire education and become a high-skilled worker or remain low-skilled. Education carries a cost of C. Assume that interest-free education loans are available to everybody.
   Let I_H and I_L denote the incomes earned by a High- and Low-skilled worker respectively.
   These incomes are defined as $I_H = (1 + \theta)H$ and $I_L = (1 + \theta)L$, where H and L are constants ($H > L$) and θ is the fraction of the population that decides to become high skilled.
   This formulation captures the idea that a person's productivity is positively linked not only to his own skills, but also to that of his fellow workers. Assume that all individuals simultaneously choose whether or not to become skilled.

A). Explain why this is like a coordination problem. What is the complementarity?
B). Show that if $H - L < C < 2(H - L)$, there are three possible equilibria: one in which everybody acquires skills, one in which nobody does, and a third in which only a fraction of the population becomes high-skilled.
Give an algebraic expression for this fraction in the last case, and argue intuitively that this equilibrium is "unstable" and is likely to give way to one of the two extreme cases.

C). Change the preceding example slightly. Suppose the return to low-skilled occupations is now given by $I_L = (1 + \lambda\theta)L$, where λ is some constant. The return to high-skilled jobs is the same as before. Show that if the value of λ is sufficiently high, there is only one possible equilibrium.

D). Explain why multiple equilibria arise in the first case but not in the second.

E). Consider another variation. Incomes from different occupations are independent of the number of high-skilled people in the economy. Specifically, $I_H = H$ and $I_L = L$. However, the cost of education is variable, and is given by $C(\theta) = (1 - \theta)/\theta$ (the idea here is that it is easier to learn if there are more educated people around). Show that once again, there are three possible equilibria. Describe them.

(4.0)

5) Consider the following version of the ***Lewis model***. There are two goods: Wheat and Shirts. In Year 0, there are no factories, while there are 100 family farms. Each farm has ten (**10**) adults, and a limited amount of land which produces Wheat as follows. If there are $\mathbf{X \leq 5}$ adults in the family working in the farm, they collectively produce **2X** units of Wheat. The land does not support gainful employment of more than five adults, so if $\mathbf{X > 5}$, the farm produces a constant amount (10 units) of Wheat. Farm members share output, and value consumption only of Wheat (i.e., they do not have any demand for shirts).
In Year 1, 10 factories are set up in the urban area. Each factory is owned by a capitalist who hires workers to maximize his own profits. The marginal product of labor in any factory is $\mathbf{12 - Y}$ shirts, if the factory is employing **Y** workers. Factories export all their output at a constant relative price of 1 shirt = 1 2 units of Wheat. Factory owners reinvest all their profits in new factories which are set up at the end of Year 1; they do not spend anything on Wheat. The setup cost of a factory equals **50** shirts. Workers incur no transport costs to travel between farms and the urban area.

A). In Year 1, what is the industrial wage rate, employment and profit per factory (in units of shirts)? How much surplus labor if there in the rural sector? What is the GDP of the country (measured in units of shirts)?
B). How do these change in Year 2?
C). Now suppose that at the beginning of Year 2, the price of shirts (relative to Wheat) doubled. What would be the effect on each of the above listed variables in Year 2?
D). Assess the impact of the change in shirt prices in Year 2 on living standards of workers and capitalists respectively.

(5.0)

1) Discuss the validity of the following statements. In your answer define or explain as precisely as possible any terms or concepts which are underlined, with particular reference to the context in which they are being used. Be brief but you should include diagrams and/or real-world examples where appropriate.

A). Growth in per capita GNP is an adequate measure of economic progress.

Sol:

FALSE

In principle, real GDP growth captures the contribution of current economic activity to household welfare. In this sense, it provides a useful benchmark index of economic progress. However, there are some less than satisfactory features of the index which we should always be aware of. These include:

- Averaging across households, with varying incomes, distorts the picture. If growing income per capita is a result only of income growth in the top quintile, say, than it is not clear that it is an appropriate measure.
- Many productive activities (e.g. household production, child rearing) do not involve market transactions and hence are not included. This is especially problematic in LDCs, where there is significant subsistence.
- Activities which take place at any one time use up resources. Some of these such as the depreciation of physical capital can be allowed for by considering net GDP. However, the value of natural resources (clean air and water, oil deposits) that are depleted in order to generate current utility, are not typically subtracted.
- Real GDP also fails to incorporate broader measures of welfare that we might want to include in our definition of economic progress (e.g. health of the population, literacy, etc.)

B). If two countries have the same level of income but different rates of investment, then according to Solow model the two countries will have the same income and growth

Sol:

FALSE.

Of the two countries, the one with a higher rate of investment will have the higher steady state level of output. If both countries are below their steady states, the country with higher investment will necessarily be further below its steady state and so will grow faster. Similarly if both countries are above their steady states, then the country with low investment will be further above its steady state, so the negative effect on growth of being above steady state will be more pronounced. And if the high-investment country is below its steady state while the low-investment country is above its steady state, the high-investment country will grow faster.

C). The hypothesis of unconditional convergence can be empirically tested by plotting the growth rate of different countries over the period 1960-85 against their growth rates over the period 1950-60 and checking if there is a downward sloping relation between the two variables.

Sol:

FALSE

Unconditional convergence can be tested by plotting the growth rate over 1960-85 against the level of per capita income in 1960 and examining whether the relationship is negative.

2) Write the three important factors (only list them) that distinguish the models of endogenous growth from their neoclassical counterparts?

Sol:

- There are increasing returns to **capital investment** (as opposed to decreasing),
- There are increasing returns to scale (as opposed to constant), and
- Externality effects are included.

3) Explain the sources of underdevelopment, according to the theory of international dependence in both its neo-colonial and false paradigm conceptualization.

Sol:

The international-dependence models comprise three major approaches which are the neo-colonial dependence model, the false-paradigm model, and the dualistic-development thesis.

The neocolonial dependence model attributes underdevelopment to exploitation of the poor countries either intentionally or through unintentional neglect. This results in an unequal power relationship with developed nations in the centre and poorer ones on the periphery. This situation is reinforced by elite groups within poor countries who are in a favored position (Landowner, government, military for example) and benefit from are rewarded by the existing relationship so that they have no desire for change.

The second model, False Paradigm, attributes lack of development to inappropriate/poor advice from rich nations/experts. Information and policies suggested are based upon inappropriate models from rich nations whose economic, political and social structures are very different.

The final model, Dualistic Development Thesis, takes the view that within all countries, there is inequality that is not temporary. The divergence between 'superior' and 'inferior' is increasing and that relationship between superior and inferior does not necessarily pull up the inferior and in fact may well push it down further.

Dependence theories have two basic weaknesses. Firstly, although they offer an appealing explanation of underdevelopment, they offer little on how countries initiate and sustain development. Secondly, the actual experience of underdeveloped countries, which pursued revolutionary campaigns of industrial nationalization, has been mostly negative.

What is the concept of ‘The Positive Assortative Matching’ in Kremer’s O-Ring Theory of economic development?

Briefly explain the circulatory system of the classical theory of economic development in terms of mathematical equations

What is the role of growth agents in the critical minimum effort theory?

Role of Growth Agents:

The critical minimum effort theory is based on the sum of positive-sum activities and such activities are carried on by some growth agents. According to Leibenstein, “By growth agents we mean those individuals who have the capacities to carry out the growth contributing activities.” Leibenstein’s growth agents are not land, labour and capital, but his growth agents are the entrepreneurs, investors, discoverers, savers and innovators. Leibenstein found that entrepreneur is the most crucial agent of growth.

He is a person of rare qualities and he is out to explore new investment opportunities so as to mobilize essential resources for production and promotion of new ventures etc. He promotes, encourages and sustains positive-sum activities which are essential for the economic growth of a country. The critical minimum theory is based on the presence of certain favorable conditions which are created by the expansion of the growth agents in the process of economic development.

These conditions lead the income increasing forces at a higher rate than the income depressing forces. The growth of contributing activities includes the creation of entrepreneurship, expansion of workers' skill and the increase in the rate of savings, investment, capital formation and technical know-how etc.