INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
DEPARTMENT OF HUMANITIES & SOCIAL SCIENCES
Autumn Semester I / [2013-14]
Ph.D Entrance Test in ECONOMICS

Full Marks: 100 Date: 1st July, 2013 Time: 3 Hours

There are Two Sections in this question paper. Read the instructions carefully.

Section I

Q1. Write an outline of a possible research proposal that you wish to take up for your Ph.D dissertation, setting out explicitly the research question(s) and/or hypotheses, major objectives, probable data source(s), variables and methodology. **[20 Marks]**

Answer ANY FOUR of the following questions **[4 × 10 = 40 Marks]**

Q2. Show how the price-cost margin differs with the total number of firms in the oligopolistic industry. Derive the Cournot (Nash) equilibrium by considering a linear inverse market demand function $P = a - bQ$; $a > 0$, $b > 0$ and constant marginal cost for each of the firms. Prove that the Cournot equilibrium is stable. What is the stability condition? **[10 Marks]**

Q3. Consider a simple Keynesian model with an investment function $I = I_0 + bY$ where $1 > b > 0$ and a saving function $S = sY$; where $1 > s > 0$. By how much will total savings change if there is a change in marginal propensity to save? Also depict its impact on the economy's output level? Explain the dynamics in the IS-LM model. Specify an open-economy IS-LM model and deduce the aggregate demand (AD) curve. **[10 Marks]**

Q4. Consider a consumer with preferences over consumption when young and old that are represented by the following utility function: $u(c_1, c_2) = c_1^{0.4} c_2^{0.6}$. Suppose that the consumer can work both the periods. The wages earned when young are $w_1 = 10$ and when old are $w_2 = 5$. Suppose that the discount rate applicable is 20 percent. What are the utility maximizing values for (c_1, c_2)? If government imposes income tax of 15 percent in the first period, what will be the change in utility maximizing consumption bundle, if any? **[10 Marks]**

Q5. Suppose that you estimate the consumption function $Y_i = \alpha_1 + \alpha_2 X_i + u_{1i}$ and the savings function $Z_i = \beta_1 + \beta_2 X_i + u_{2i}$, where Y = consumption, Z = savings, X = income and $X = Y + Z$. What is the relationship, if any, between α_2 and β_2? Show your calculations. Explain whether the residual sum of squares will be the same for the two models? Can you compare the R^2 terms of the two models? Why or why not? **[10 Marks]**

Q6. Critically examine the various poverty alleviation programmes initiated by Government of India in the recent past. **[10 Marks]**

Q7. Identify the external costs and benefits resulting from the use of biofuels as a close substitute for gasoline. How would the use of biofuels impact the market for gasoline? **[10 Marks]**

Section II

Q8. Write Explanatory Notes on ANY FIVE of the following. **[5 × 8 = 40 Marks]**

(a) Permanent Income Hypothesis of consumption (savings) theory

(b) India's progress towards Millennium Development Goals

(c) Absolute and conditional convergence in the Solow growth model

(d) Health care financing in India

(e) Elasticity of demand and magnitude of Dead Weight Loss under monopoly

(f) Asymmetric Information

(g) Policy implications of the Harris-Todaro Model of Migration

(h) Three major limitations in computation of GDP with special reference to the treatment of environment

(i) Commodity derivative

(j) Marshall-Lerner Condition

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