Indian Institute of Technology, Kharagpur

Date: _____FN/AN Time 3 hrs Full Marks 50 No of Students: 425 (Approx)

Autumn End-Sem. Exam, 2010 Dept: HSS Subject No: HS 20001

Subject: Economics

Instruction: Answer any five questions

1. (a) Define the law of diminishing marginal returns. Discuss the three stages of production in a short run situation considering labour as the only variable input. In which stage will you produce and why? **1+3+1**

   (b) Explain the laws of returns to scale with the help of Cobb-Douglas production function. Also discuss the basic properties of a Cobb-Douglas production function. **3+2**

2. (a) Discuss the relationship between Short-run Average Cost (SAC) and Short-run Marginal Cost (SMC) curves. The cost function of a cement factory is given as $C = 10 + 6Q - 0.9Q^2 + 0.05Q^3$. Measure the critical value of output with respect to average variable cost (AVC). **1+1**

   (b) Write short notes any four on the following: **2 X 4**

   i) Prove that MR = P [1-(1/e)], where MR = Marginal revenue, P = Price and e = price elasticity of demand

   ii) Economic region of production

   iii) Private cost and social cost

   iv) Marginal cost and its derivation from short-run total cost

   v) Shadow prices

3. a) Haldia Petrochemicals Ltd is considering a new investment proposal in West Bengal. Its initial estimates suggest that the total capital required for the project is Rs 620 Cr of which Rs 200 Cr would be machinery cost, another Rs 250 would be spent on reorganization of the activities and the rest will be required for rehabilitation and resettlement packages. The project will last for five years. The project will earn sales revenue of Rs 350 Cr in the first year of project implementation, which would increase by 20% annually in subsequent years over the previous year's revenues. Total fixed cost per annum is estimated to be Rs 80 Cr and 20% of the sales revenue will constitute the variable costs. The company applies flat depreciation rate to estimate the amount of depreciation. It has to pay a profit tax at the rate of 25%. The company will receive a salvage value of Rs 60 Cr. Find out the net cash flows over the life of the project?
   If the rate of interest is 12%, how much of net present value will the company expect from the project? Should the firm undertake the new project? **5**

   b) Compare perfect competition with monopoly in terms of price, quantity, profit, demand curves, shut down point, and short- and long-run equilibrium situations. **3**

c) If two projects are mutually exclusive, which method, between IRR and NPV, should be applied and why? **2**

4. a) What are the reasons for the existence of monopoly? In which situations should the monopoly market be considered better than other market forms and why? **3**

b) Discuss the methods of evaluating capital projects with their merits and limitations. Which method, according to you, should be chosen, if there is capital constraint? **3**

c) Suppose the demand function faced by a firm is $P = 45 - 0.5Q$

Cost function is $C = Q^3 - 8Q^2 + 57Q + 2$

Find out profit maximizing output, price and amount of profit at the equilibrium level.

Due to a decrease in demand for the product, if the price is reduced by Rs 5 per unit from the above equilibrium price, should the firm remain in operation? Give reasons to your answer. **4**

5. Discuss the importance of foreign trade in economic development. Critically evaluate India's foreign trade policy in different phases. Also discuss the impact of globalization on Indian economy within the overall frame work of WTO. **2 + 4 + 4**

6. Distinguish between <u>any five</u> of the following: **2 X 5**

a) Value added method and income method of estimating National Income

b) Personal Income and Per Capita Income

c) Gross National Income and Gross Domestic Income

d) Money Income and Real Income

e) National Income at market prices (NI at mp) and National Income at factor cost (NI at fc)

f) Intra-generational and inter-generational equity
