

Indian Institute of Technology Kharagpur

Date: _____ FN/AN

Time 3 hrs

Full Marks 50

No of Students: 372

Spring End-Sem. Exam, 2012

Subject: Economics

Subject No: HS 20001

Instruction: Answer any five questions

1. a) What do you mean by short-run and long-run productions? Discuss the three stages of production with one variable input. 2 + 2.5
b) Elaborate the laws of returns to scale in the context of Cobb-Douglas production function. What are the conditions for maximization of output with a given cost? 2 + 1.5
c) Suppose production function for Maruti Udyog Ltd. has been estimated as $Q_M = 100 K^{0.25} L^{0.75}$ and for Tata Automobiles it is $Q_T = 50 K^{0.25} L^{0.80}$, where Q = number of cars produced per day, K = units of capital, L = units of labour. If both the companies are using capital and labour in the same proportion, find i) which of the companies is operating under what law of returns to scale?, ii) which of the companies has a greater marginal productivity of labour? 2
2. a) Compare and contrast private cost vs. social cost, implicit cost vs. explicit cost, and actual cost vs. opportunity cost? Prove that short-run marginal cost (SMC) curve passes through the short-run average cost (SAC) curve at its minimum point. 6 + 2
b) If the total cost function of a firm is $TC = 2Q^3 - 16Q^2 + 30Q + 16$ with Q as the level of output, measure average fixed cost (AFC), average variable cost (AVC), marginal cost (MC), and critical value of output with respect to AVC. 2
3. a) Define multiplier and discuss its importance. Suppose that
Savings function $S = -10 + 0.4Y$
Original investment function $I = 15 + 0.3Y$
New investment function is $I_1 = 30 + 0.3Y$

Derive equilibrium incomes and the value of multiplier. Present the effects of multiplier under the assumptions that (a) investment is temporary and (b) investment is continuous. Make both tabular and algebraic presentations and interpret the results. Explain the role of realized and planned investments. 6
b) Compare and contrast perfect competition and monopoly in terms of demand curves, entry conditions, cost functions, price, output, profit, shut-down points, and short- and long-run equilibrium. Prove the relationship between AR and MR curves in terms of elasticity and its implications for the above two market forms. 4
4. a) A firm is planning to undertake a project which will last for four years. With an initial amount of capital outlay of Rs 1 Cr (Rs 60 lakh on land, buildings and equipment and

Rs 40 lakh on working capital), the company estimates that its sales revenue will be Rs 50 lakh in the first year. Sales revenue will increase by 20% annually in two subsequent years over the preceding year's sales revenue and then increase by 10% annually for two more years. The company's variable costs will be 30% of the sales revenues and fixed costs will be Rs 10 lakh per annum. The company is supposed to pay a marginal tax on its profits at 20%. The company applies flat depreciation rates for its wear and tear. It will get back a salvage value of Rs 10 lakh. Estimate net cash flows over the life of the project. Assume that the returns are generated at the end of every year. The market rate of interest is 8%. Find out the NPV of the project and suggest whether the project should be undertaken. 6

- b) The financial manager of a company finds the average variable cost function to be

$$AVC = 9 - 0.05Q + 0.0005Q^2$$

It is found that the total fixed cost incurred by the firm is \$500. The firm operates in a perfectly competitive market.

- i) Find the marginal cost function.
- ii) What will be the output of the firm in the short-run. How much profit/loss will the company earn if the price is decided at \$10 per unit? 4

5. a) Define National income and explain the different methods of its estimation. Is it true that National income can measure growth, welfare and sustainability of a country? Discuss. 5

- b) Describe the trend in the growth of National income in India and discuss the difficulties and limitations in its estimation. 5

6. a) Have we radically transformed ourselves from a protective regime to a liberal state? Discuss the economic reform process in India and its outcome in the context of India's development experience. 5

- b) Distinguish the following in the context of National income accounts 5

- i) Gross and net
 - ii) Domestic and national
 - iii) Money income and real income
 - iv) NI (at fc) and NI (at mp)
 - v) Personal income and per capita income
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