

Indian Institute of Technology Kharagpur  
Autumn End-Semester Examination 2018-19

20/11/2018  
ANW

Date: \_\_\_\_\_ FN/AN Time: 3 hrs Full Marks: 50 No of Students: 410  
Subject: Economics Subject No: HS20001  
Department/Centre/School: HSS

**Instructions: Answer one question in one place only. All questions are compulsory.**

1. (a) Differentiate between short-run and long-run production processes. Elaborate the laws of returns to scale in the context of a production function like  $Q = A K^\alpha L^\beta$  where  $Q$  represents output,  $K$  represents capital, and  $L$  represents labor. Show in details what  $\alpha$  and  $\beta$  represent in the production function above. Elaborate why the increasing return to scale is possible in the early stages of production? 1+1.5+2+1.5

(b) What do you mean by the economic region of production? Why do we consider only the negatively sloped portion of an isoquant? 1+1

(c) Distinguish between explicit cost and implicit cost. Given the total cost function

$$TC = 2Q^3 - 15Q^2 + 30Q + 16$$

where  $TC$  is the total cost and  $Q$  is the output (in '000).

Find (i) the critical value of output with respect to the average variable cost, (ii) slope of the marginal cost curve, and (ii) the output at which marginal cost is equal to average variable cost. 2+1+1+2

(d) Discuss with suitable examples the internal economies of scale. 3

2. (a) Discuss both non-discounting and discounting methods of capital budgeting along with their merits and demerits. If two projects are mutually exclusive, which method between NPV and IRR is preferable and why? 3+2

(b) Define product market and describe its various broad forms. Discuss the basic characteristics of perfect competition along with the conditions of profit maximization of the firms both in the short-run and long-run.

A firm's cost function is  $C = 150Q + 0.0025Q^2$ , where  $Q$  represents output. The going price of the product sold by the firm is INR 175 per unit and the firm is a price taker. Estimate the maximum profit and the profit maximizing output of the firm. 1+2+2

**P.T.O.**

(c) A start-up company conceives two different projects X and Y with the initial capital requirement of INR 10,00,000 each. Given below are the net cash flows of the two projects:

Net Cash Flows (Years)	Project X (INR)	Project Y (INR)
1	3,00,000	-1,00,000
2	3,00,000	10,000
3	3,00,000	3,00,000
4	3,00,000	3,00,000
5	3,00,000	13,00,000

Find the payback period and suggest which project is better according to this method. Also estimate NPV and profitability index ratio of each project. If capital is a constraint, suggest which project is worth-considering. Assume that the interest rate is 10% per annum. 2+4+1

3. a) Compute the unemployment rate for the economy that has the following statistics. Population = 150 million, Labour force participation rate = 60%, and employment = 80 million. 1
- b) Discuss similarities and differences in various working group and expert group approaches to measure poverty in India. 4
- c) Critically examine diverse types of unemployment with reference to developed and developing countries. 2
- d) Write short notes on (i) Dalton Principle and (ii) Gini-Coefficient 4
- e) What is human development? Explain the recent methodology adopted by UNDP to measure human development. 5