

R.M.

Indian Institute of Technology Kharagpur

Date: _____ FN/AN Time: 3 hrs Full Marks: 50 No of Students: 410 (Approx)

Spring End-Sem. Exam, 2016 Subject: Economics Subject No: HS20001

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

1. a) State the law of diminishing marginal returns. Why does production increase at an increasing rate in the initial stage of the law? What is meant by economic region on the production plane? Under what conditions are the isoquants convex to origin? What are the factors that cause increasing and decreasing returns to scale? Show in a Cobb-Douglas production function that the marginal products of labour and capital depend on their ratios in the production function. (1 + 1 + 1 + 1 + 2 + 2)
- b) Illustrate the relationship between short-run average cost (SAC) and short-run marginal cost (SMC) assuming a cubic cost functions. Explain with examples the economies and diseconomies of scale. (1 + 2)
2. a) Calculate elasticity of supply of the following supply function when price $P = 10$
- i) $S = -100 + 2P$
- ii) $S = -77 + 4P + P^2$ (1 + 1)
- b) A firm's production function is given by $Q = - (2/3) L^3 + 10 L^2$, where Q is the output produced and L is the labour employed. Show that the diminishing marginal product of labour operates when employment of labour is 6 or more. (2)
- c) Given the total cost function $TC = 2Q^3 - 15Q^2 + 30Q + 16$. Find out the level of output at which marginal cost is equal to average variable cost. (2)
3. a) Derive the value of multiplier and prove that there can be as many multipliers as the demand functions and the value of multiplier varies according to the nature of the demand functions.
- An economy's consumption function
 $C = 50 + 0.80Y$
and
investment $I = 100$.
where Y stands for household income.
Derive equilibrium income. If autonomous investment is increased by 50, what would be its impact on income under the conditions that the rise in investment is (a) once-over type, and (b) permanent? Illustrate this with the help of two separate tables while exhibiting the relationship between total income and total spending, and realised investment and planned investment. (1+2+2)
- b) Why is the demand curve of a perfectly competitive firm infinitely elastic? In this context, discuss the basic characteristics of perfect competition with their significance and the conditions of profit maximization both in the short-run and long-run. (1+2+1)

4. a) Why does the time value of money change? How can they be considered while deriving the present value of money? (2)
- b) What are the discounting methods of evaluating capital projects? Which one is a superior method and why?

A firm is considering two proposals, A and B, each requiring an initial capital of INR 50 Crore. The expected net cash flows are given as follows:

Year	Project A (INR Crore)	Project B (INR Crore)
1	38	11
2	22	19
3	18	32
4	10	37

Compute the payback period and NPV of the two projects and suggest which one is better under each method. Assume that the risk adjusted discount rate is 12%.

(2+2+2)

5. a) How does integration of economies increase the standard of living as measured by per-capita income? (6)
- b) What is Human Development? Explain the concept of capability using suitable mathematical notations. (1+4)
- c) What is trade balance? What do you understand by current account deficit (CAD)? Show that budget deficit leads to higher CAD? (1+1+3)