

2021

ECONOMICS — HONOURS

Paper : CC-5

(Intermediate Microeconomics – I)

Full Marks : 65

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

Group – A

1. Answer *any ten* questions : 2×10
- (a) Explain whether the following statement is true or false— “the law of diminishing marginal utility does not apply to a production function that exhibits constant returns to scale.”
 - (b) Does the backward bending labour supply curve imply that leisure is a luxury?
 - (c) The marginal product of labour for production of a good X is 50 units per hour. The marginal rate of technical substitution of hours of labour for hours of machine is $\frac{1}{4}$. What is the marginal product of capital?
 - (d) How is quasi rent related to total fixed cost of production?
 - (e) Define moral hazard and give an example.
 - (f) Let $q = L^2 + 2L + 4$ be the production function of a perfectly competitive firm. For $W = ₹ 48$ and $P = ₹ 6$, find the profit maximizing employment level of the firm, where L is the level of labour employment, W is the wage rate and P is the price level.
 - (g) What is the degree of homogeneity of a Cobb-Dauglas production function $q = AL^\alpha K^\beta$? Under what condition does the production function exhibits CRS?
 - (h) Why is the demand for input is called as derived demand?
 - (i) Anindya lives in a world of two time periods-today and tomorrow. At the beginning of each period he earns ₹ 210. If the interest rate in each period is 0.5, what is the present value of his life time income?
 - (j) If the production function is given by $Q = K + L$ and the prices of capital and labour are ₹ 2 and Re 1 respectively, how will the expansion path look like?
 - (k) The equation of the total cost curve facing a perfectly competitive firm in the short run is $TC = 50 + 2Q^2$. At what level of output average cost of production will be minimum?
 - (l) Sahana is observed to purchase $Q_1 = 20, Q_2 = 10$ at prices $P_1 = 3$ and $P_2 = 6$. She is also observed to purchase $Q_1 = 18, Q_2 = 4$ at prices $P_1 = 3$ and $P_2 = 5$. Is her behaviour consistent with the axioms of the theory of revealed preference?

Please Turn Over

- (m) The owner of a small retail store does her own accounting work. How would you measure the opportunity cost of her work?
- (n) If the utility function of an individual is given by $u = 2w$, where w denotes wealth. Comment on his attitude towards risk.
- (o) For a firm $MP_L = 10$, $MP_K = 15$, $P_L = ₹ 30$ and $P_K = ₹ 15$. Explain why the firm is being run inefficiently.

Group – B

2. Answer *any three* questions :

- (a) The utility function of an individual is given by $u = w^2$, where $u =$ utility and w is the level of wealth. Comment on his attitude towards risk. Draw his utility function. 3+2
- (b) Do you think that the decreasing cost is compatible with the features of a competitive market? 5
- (c) A firm produces bicycles using two variable inputs— bicycle frames and wheels.
- (i) What would be the shape of the isoquants?
- (ii) What is the degree of substitutability between the two inputs?
- (iii) Draw the isoquants for 100 and 200 units of output. 1+1+3
- (d) (i) Explain the relationship between Long Run Average Cost (LRAC) and returns to scale.
- (ii) What happens to the LRAC if there is an improvement in the technology? 3+2
- (e) Define value of Marginal Product of Labour. In a perfectly competitive set up, how is it related to Marginal Revenue Product of Labour? 2+3

Group – C

Answer *any three* questions.

3. (a) Suppose that a competitive firm has a total cost function $C(q) = 450 + 15q + 2q^2$. If the market price is $P = ₹ 115$ per unit, find the level of profit and the level of producer's surplus. 3+2
- (b) Each firm in a competitive market has a cost function $C = 16 + q^2$. The market demand function is given by $Q = 248 - p$. Determine –
- (i) The long run equilibrium price and quantity per firm.
- (ii) Also find the market output and the number of firms. 3+2
4. (a) Is it possible for the long run supply curve of a competitive industry to be positively sloped? Explain. 3
- (b) A competitive firm has the following short run cost function : $C(q) = q^3 - 8q^2 + 30q + 5$.
- (i) Find the expressions for Marginal cost, Average cost, Average variable cost.
- (ii) At what range of prices will the firm supply zero output?
- (iii) At what price would the firm supply exactly 6 units of output? 2+3+2

5. (a) A bottling company uses two inputs to produce bottles of soft drinks : machines (K) and workers (L). The machine costs ₹ 1,000 per day to run and the workers earn ₹ 200 per day. At current level of production, the marginal product of the machine is an additional 200 bottles per day and marginal product of labour is 50 more bottles per day. Is the firm minimizing cost? Explain why. If it is not minimizing cost, explain how the firm should change the ratio of inputs it uses to lower its cost.

1+2+2

- (b) By studying, Shyam can produce a higher grade on an upcoming economics exam. His production function depends on the number of hours he studies marginal analysis problems A, and the number of hours he studies supply and demand problems, R, and is given by : $G_S = 2 \cdot 5A^{0.36} R^{0.64}$.

(i) What is Shyam's MRTs between studying the two types of problems if he distributes his study time equally between marginal analysis and demand supply problems.

(ii) Interpret the result.

3+2

6. (a) The utility obtained by an individual from a certain wealth of ₹ 10,000 is the same as his expected utility from investing this wealth in the capital market. If there is 75% probability of getting a return of ₹ 15,000 and 25% probability of getting a return of ₹ 6,000 from the investment project, what is his risk premium? Comment on the attitude towards risk of this person.

4+1

- (b) A person's utility from wealth is given by $u(w) = 2\sqrt{w}$. The person's initial asset holding is ₹ 25. The person can accept a gamble where she wins ₹ 11 with probability $\frac{1}{2}$ and lose ₹ 9 with probability $\frac{1}{2}$.

(i) What is his expected utility from the gamble?

(ii) Will he accept the gamble?

(iii) Comment on his attitude towards risk.

3+1+1

7. (a) A person faces two income streams A and B which generates income according to the following schedule :

Stream	Income (₹)	
	Current Period	Future Period
A	100	150
B	120	130

Which stream will be adopted if the one period interest rate is 10%?

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- (b) Suppose a consumer survives of just two time periods 1 and 2. The consumer gets income M_1 and M_2 in the two periods and consumes C_1 and C_2 . The consumer can reallocate consumption between the two periods by saving or borrowing. If the ruling rate of interest is r , what is the present value of his lifetime income? Draw the intertemporal budget line for the consumer.

2+3