SPRING END SEMESTER EXAMINATION-2019
4th Semester B.Tech & B.Tech Dual Degree

ENGINEERING ECONOMICS
HS-2002

(For 2018(L.E) & 2017 Admitted Batches)

Time: 3 Hours   Full Marks: 50

Answer any SIX questions.
Question paper consists of four sections-A, B, C, D.
Section A is compulsory.
Attempt minimum one question each from Sections B, C, D.
The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable and
all parts of a question should be answered at one place only.

SECTION-A

1.   Answer the following questions. $[1 \times 10]$

(a) Distinguish between Cardinal and Ordinal approaches to measurement of utility.

(b) When 10 units of labor are employed, average productivity of labor (AP_L) is 6 units. If AP_L increases to 7 units as a result of increase in labor input by one, what will be the marginal productivity of 11th unit of labor?

(c) Total cost function of a firm is $C = 500 + 5Q$. If price of the product sold by the firm is 7 per unit, what will be the break-even sales revenue?

(d) For a product, industry demand and supply functions are estimated to be
       $Qd = 500-10P$
       $Qs = 300+10P$
     If government puts a price ceiling of Rs.9 for the product, what will be the consequence?

(e) The demand function is given by Q = 200-5P. Find the level of output at which total revenue is maximized.

(f) The production function of a firm is given by Q= 500+ 60L -6L^2. Find the Level of output at which marginal product is maximized.

(g) The demand curve for bread is given by Q = 500-10P.If the price increases from Rs.10 to Rs.15, what is the arc elasticity of demand?

(h) Define inflexion point on total product curve and mention what happens to the marginal product curve corresponding to the said point.

(i) A person is planning for his retired life. He would like to deposit Rs. 5000/- at the end of first year, and thereafter he wishes to deposit the amount with an annual increase of Rs. 600/- for the next 9 years with an interest rate of 12%. Draw the cash flow diagram.

(j) A Company has purchased an equipment whose first cost is Rs. 100000 with an estimated life of eight years. The estimated salvage value of the equipment at the end of its lifetime is Rs. 20000. Determine the book value of the equipment for period 5 using the Straight Line Method.

SECTION-B

2. (a) A Company has purchased an equipment whose first cost is Rs. 250000 with an estimated life of 10 years. The estimated salvage value of the equipment at the end of its lifetime is Rs. 30000. Give the calculations regarding the sinking fund method of depreciation with an interest rate of 12%, compounded annually.   [4]

(b) A firm invests in one of the two mutually alternatives the details of which are given below. Determine the better alternative based on the annual equivalent method by assuming i = 20%, compounded annually.   [4]

Particulars	Alternative A	Alternative B
Life	15 Yrs	15 Yrs
i	20%	20%
First Cost	Rs. 100000	Rs.110000
Annual Equal	Rs. 70000	Rs. 80000
Returns	Rs. 10000	Rs. 20000
Salvage Value		

3. (a) Details of two alternatives are given below. Select one [4]
between the two on the basis of future worth method.

Particulars	Alternative-1	Alternative-2
Initial Cost (Rs.)	400000	800000
Useful Life (yr.)	4	4
Salvage Value (Rs.)	200000	550000
Annual Cost (Rs.)	40000	Nil
i (Nominal Interest Rate)	12%	12%

(b) Explain how monetary measures and fiscal measures [4]
facilitate bringing in stability for an economy. Give
your opinion on effectiveness of these measures.

SECTION-C

4. (a) A State govt. is planning a hydroelectric Project for a [4]
river basin. In addition to the production of electric
power, this project will provide flood control, irrigation
and recreation benefits. The estimated benefits and
costs that are expected to be derived from this project
are as follows.

Particulars	Amount (in Rs.)
Initial Cost	70000000
Annual Power Sales	7000000
Annual flood control savings	4000000
Annual irrigation benefits	4500000
Annual recreation benefits	2500000
Annual operating and maintenance costs	3200000

Check whether the State govt. should implement the Project (assume i = 13%).

(b) A Company wants to purchase a machine. There are [4] two machines A and B available in the market details of which are given below. Decide which machine should the company purchase on the basis of pay-back period method.

Year	Cash Flow for Machine A (Rs.)	Cash Flow for Machine B (Rs.)
0	-500000	-500000
1	140000	100000
2	240000	220000
3	420000	320000
4	430000	455000
5	460000	480000
6	520000	520000

5. (a) A Company has identified two mutually exclusive [4] investment proposals. The details of both the Proposals are given in the following table. Find the better alternative on the basis of rate of return method of comparison.

Particulars	Alternative	
	A	B
Investment (Rs.)	210000	255000
Annual Net Income (Rs.)	58260	69000
Life	5 yrs	5 yrs
Salvage Value	Nil	Nil
Minimum Attractive rate of return	10%	

(b) A Monopolist firm experiences the Total Cost (TC) = $130 + Q^2$ and Demand Equation (Q) = $1200 - 110P$. Find the equilibrium level of output of the firm. Calculate the profit or loss generated by the firm. [4]

6. (a) Explain the Law of Variable Proportions and discuss why this law is also called as the law of Diminishing Returns. [4]

(b) Explain the situation of price effect and income effect for an inferior commodity and a necessary commodity that we demand by a fixed quantity. [4]

SECTION-D

7. (a) ABC Ltd. operates under conditions of perfect competition. The total cost (TC) function of the firm is estimated as follows: [4]

$$TC = 200 + 150Q - 20Q^2 + Q^3$$

Where, Q is quantity

You are required to compute the price below which the firm will be forced to shut down its operations.

(b) Demand and supply functions for rice are estimated as follows: [4]

$$Qd = 7 - P/3$$
$$Qs = 3 + P/3$$

Where Q = Quantity in million tons

P = Price in Rs. per kg.

Find the equilibrium price and quantity of rice.

The government announces a minimum support price (MSP) of Rs.7.5 /kg and would like to release rice to the market only through Food Corporation of India (FCI). Accordingly, FCI procures rice at the MSP and offloads the same at a price that clears the procured stock. What is the profit/loss to FCI because of this transaction?

8. (a) A Producer is experiencing the Production function [4]
$Q=80L^{0.5}K^{0.5}$. Given that the Price of K is 3 and that of L is 4. The Producer is currently producing 250 output using the factor combination K=15 and L=5. Is this an efficient Combination?

(b) Demand Schedule for a commodity is given below. [4]

Price	Quantity Demanded
10	58
12	52
9	65
11	60
14	55
13	57

Decide on the basis of price elasticity of demand (for given price of 15) whether the producer/seller will be advisable for price cut or price hike strategy for augmenting the sales volume.

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