WEST BENGAL UNIVERSITY OF TECHNOLOGY

AUE-801(HU)

ENGINEERING ECONOMY & FINANCIAL MANAGEMENT

Time Allotted: 3 Hours | Full Marks: 70

The questions are of equal value
The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable
All symbols are of usual significance.

GROUP A
(Multiple Choice Type Questions)

1. Answer any *ten* questions. 10 × 1 = 10

(i) Inferior goods are those for which price elasticity (E_p) is

(A) positive (B) negative
(C) one (D) zero

(ii) If price of a commodity decreases then demand

(A) increases (B) decreases
(C) remains constant (D) may increase or decrease

(iii) For luxurious goods income elasticity (E_i) is

(A) negative (B) positive
(C) less than unity (D) greater than unity

(iv) Break-even point indicates the volume of production related to

(A) Profit (B) Loss
(C) No profit-no loss (D) Profit at a moderate rate

(v) The past cost that are unrecoverable is called

(A) Opportunity cost (B) Unrecoverable cost
(C) Sunk cost (D) Loss

(vi) Isoquant has the slope of:

(A) positive (B) negative
(C) zero (D) none of these

(vii) The degree of operating leverage at BEP is

(A) slightly negative (B) slightly positive
(C) zero (D) infinity

(viii) Consumer wants

(A) Maximum utility
(B) Minimum utility
(C) Minimum profit &Maximum utility
(D) None of these

(ix) Cash flow after tax is computed as

(A) PAT + Depriciation (B) PAT – Depriciation
(C) PAT (D) EBIT

(x) MC curves intercepts AC when

(A) AC is maximum (B) AC minimum
(C) AC is rising (D) none of these

(xi) Cross elasticity of demand arises by

(A) Substitute goods (B) Complementary goods
(C) Giffen goods (D) None of these

GROUP B
(Short Answer Type Questions)

Answer any *three* questions. 3×5 = 15

2. State the theory of consumer behavior in short.

3. What is an indifference curve? Explain. Write down the properties of an indifference curve. What is an indifference map?

4. Write down different types of production functions.

5. Mathematically prove that the condition of equilibrium a consumer is

$$\frac{MU_x}{MU_y} = \frac{P_x}{P_y} = MRS_{x,y}$$

Where, MU_x = marginal utility for commodity x
MU_y = marginal utility for commodity y
P_x = marked price of commodity x
P_y = marked price of commodity y.

6. Define risk and return. How is risk measured? What are the different types of risks?

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GROUP C
(Long Answer Type Questions)

Answer any *three* questions. 3×15 = 45

7. (a) Define short run cost and long run cost. Symbolically write short run cost function and long run cost function.

(b) The demand curve of a monopolist is $X = 50 - 0.5p$ and the cost function is $C = 50 + 40X$. Find (i) the marginal revenue (ii) marginal cost.

(c) Establish that the relationship between marginal revenue (MR) and price elasticity (e) is

$$MR = P\left(1 - \frac{1}{e}\right),$$

Where, P is demand function.

8. (a) Following are some pertinent details of the trading activities of ABC Ltd. 10

Stock velocity	8 months
Debtors velocity	3 months
Creditors velocity	2 months
Gross profit ratio	25%

Gross profit for the year is Rs. 4,00,000. Bills receivable Rs. 25,000 and Bills payable Rs. 10,000. Closing stock for the year is Rs. 10,000 more than opening stock. Find out: (i) Sales, (ii) Debtors.

(b) What are the significance of Liquidity ratio? 5

9. The selling price of a SUV is Rs. 15,00,000. The dealer gets a margin of 20%. 15

The variable cost per car comes around Rs. 8,00,000. The company introduced 450 SUVs in the month of January 2015. The fixed costs were calculated at Rs. 4,00,00,000.

(i) What was the amount of profit to be earned if all the cars are sold

(ii) Volumes required to break even.

(iii) Profit when the number or cars sold reaches 10,000.

(iv) Margin of safety at the present level of sales.

(v) The volume of sales required if the company wishes to make a profit of 20 cores in one quarter.

10.(a) The following data are available for a firm. 10

Quantity	=	20,000
Selling price	=	Rs. 20
Variable cost (unit)	=	Rs. 15
Fixed costs	=	Rs. 40,000
Interest	=	Rs. 10,000
Preferred dividend	=	Rs. 5,000
No of Equity Shares	=	10,000
Tax rate	=	40%

Calculate :

(i) Profit before interest and taxes

(ii) Earning per share

(iii) Degree of operating leverage

(iv) Degree of financial leverage and

(v) Degree of total leverage

(b) Briefly describe the model of price discrimination. 5

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11. Hyundai Motor wants to replace its old polishing machine with new automatic one. It was evaluating between two models namely Model 1 and Model 2 in consideration at the same cost of Rs. 5,00,000 each. Salvage value (Buy at the back offer) of the old machine is Rs. 1,00,000. The utilities of the existing machine can be used if the company selects Model 1. Again additional costs of utilities purchased in that case are Rs. 1,00,000. If the company purchases Model 2 then all the existing utilizes have to replaced with new utilities costing Rs. 2,00,000. The salvage value of old utilities will be Rs. 20,000. The cash flow are expected to be:

Year	Model 1	Model 2
1	1,00,000	2,00,000
2	1,50,000	2,10,000
3	1,80,000	1,80,000
4	2,00,000	1,70,000
5	1,70,000	40,000
Salvage value at the end of 5 year	50,000	60,000

You are required to compute for two machines separately (when PV factor at 15% is given for 1st year -0.870; 2nd year -0.756; 3rd year -0.658; 4th year -0.572, 5^{th} year -0.497):

(a) Net Present Value

(b) Discounted Pay Back Period

(c) Desirability factor

Advise which of the machines to be selected.