Course: ECONOMICS AND LIFECYCLE CONCEPTS   Semester: 8th

Program: B.Tech.(ADE)   Time 03 hrs.

Course Code: PMEO401   Max. Marks: 100

SECTION A (30 X 1 = 30)

1. The 'law of demand' implies that:

   a. As prices fall, quantity demanded increases.

   b. As prices rise, quantity demanded increases.

   c. As prices fall, demand increases.

   d. As prices rise, demand decreases

2. Which of the following will cause a change in quantity supplied?

   a. Technological change.

   b. A change in input prices.

   c. A change in the market price of the good.

   d. A change in the number of firms in the market

3. If demand is price elastic, then:

   a. a rise in price will raise total revenue.

   b. a fall in price will raise total revenue.

   c. a fall in price will lower the quantity demanded.

   d. a rise in price won't have any effect on total revenues.

4. A cost incurred in the past that cannot be changed by any future action is a(n)

   a. opportunity cost

   b. sunk cost

   c. relevant cost

   d. avoidable cost

5. Cost in the short-run can be classified into………and variable cost.

    a. fixed cost

    b. asset

    c. both (a) and (b)

    d. None of these

6. Marginal costs is the change in total cost resulting from unit change in……..

    a. output

    b. input

    c. both(a) and (b)

    d. None of these

7. Which of the following are used in calculating opportunity costs?

    a. monetary costs

    b. the cost of time

    c. preference

    d. all of the above

8. A variable cost is a cost that

    a. varies per unit at every level of activity

    b. occurs at various times during the year

    c. varies in total in proportion to changes in the level of activity

    d. may not be incurred, depending on management's discretion

9. A cost which remains constant per unit at various levels of activity is a

    a. variable cost

    b. fixed cost

    c. mixed cost

    d. manufacturing cost

10. The level of activity at which total revenues equal total costs is the

    a. variable point

    b. fixed point

    c. semi-variable point

    d. d. break-even point

11. The cost reduction technique in comparison to the worth of a product is known as

a. Reverse engineering

b. Value engineering

c. Material engineering

d. Quality engineering

12. Value analysis examines the

a. Design of every component

b. Method of manufacturing

c. Material used

d. All of the above

13. Value can be defined as the combination of _____ which ensures the ultimate economy and satisfaction of the customer.

a. Efficiency, quality, service and price

b. Efficiency, quality, service and size

c. Economy, quality, service and price

d. Efficiency, material, service and price.

14. Value analysis is a _____ process

a. Remedial

b. Preventive

c. Continuous

d. None of the above

15. Which is not the method for MAKE or BUY decisions

a. simple cost analysis

b. economic analysis

c. break even analysis

d. future worth analysis

Fill in the blanks:

16. The costs those which neither contributes to function nor the appearance of the product is called_____.

17. Value analysis should be applied when_____ on investment is reducing.

18. The demand curve is down sloping because at higher price for good the people look for_____.

19. Two explanations for the law of demand are substitution and_____.

20. The revenue that can be obtained from selling one more unit of product is called _____ revenue.

True/False:

21. Elasticity of demand is the degree of responsiveness of quantity demanded to a Change in price.
22. Value specifies the purpose of the product or what the product does, what is its utility etc.
23. The present worth measures the surplus in an investments project at time zero (0).
24. The criterion provide a basis for measuring investment worth by determining equal payments on an annual basis is annual equivalent method.
25. Service output method of depreciation is a type of computing depreciation base on service rendered by an asset.

Match the following:

26. Causes of depreciation	a. Rate of return
27. Value of a product	b. relative profitability of products
28. Causes of breakdown	c. function or utility/ cost
29. Break-even interest rate	d. Wear and tear
30. P/V ratio	e. Failure to replace worn out parts

SECTION B (5 X 10 = 50)

1. Explain the laws of supply and demand.

   OR

   In the design of a jet engine part, the designer has a choice of specifying either an aluminum alloy casting or a steel casting. Either material will provide equal service, but the aluminum casting will weigh 1.2 kg as compared with 1.35 kg for the steel casting. The aluminum can be cast for Rs. 80.00 per kg. and the steel one for Rs. 35.00 per kg. The cost of machining per unit is Rs. 150.00 for aluminum and Rs. 170.00 for steel. Every kilogram of excess weight is associated with a penalty of Rs. 1,300 due to increased fuel consumption. Which material should be specified and what is the economic advantage of the selection per unit.

2. A company has extra capacity that can be used to produce a sophisticated fixture which it has been buying for Rs. 900 each. If the company makes the fixtures, it will incur materials cost of Rs. 300 per unit, labour costs of Rs. 250 per unit, and variable overhead costs of Rs. 100 per unit. The annual fixed cost associated with the unused capacity is Rs. 10,00,000. Demand over the next year is estimated at 5,000 units. Would it be profitable for the company to make the fixtures?

3. A company provides a car to its chief executive. The owner of the company is concerned about the increasing cost of petrol. The cost per litre of petrol for the first year of operation is Rs. 21. He feels that the cost of petrol will be increasing by Re.1 every year. His experience with his company car indicates that it averages 9 km per litre of petrol. The executive expects to drive an average of 20,000 km each year for the next four years. What is the annual equivalent cost

of fuel over this period of time?. If he is offered similar service with the same quality on rental basis at Rs. 60,000 per year, should the owner continue to provide company car for his executive or alternatively provide a rental car to his executive? Assume i = 18%. If the rental car is preferred, then the company car will find some other use within the company.

4. An electronic equipment contains 1000 resistors. When any resistor fails, it is replaced by new resistor. The cost of replacing the resistor individually is Rs. 10/-. If all the resistor is replaced at once the replacement cost per resistor is Rs. 4/-. The percentage of surviving $S(i)$ at the end of the month is as follows:

i	0	1	2	3	4	5	6
S(i)	100	96	89	68	37	13	0

Which is the optimum plan?

5. Original cost of the machine : Rs. 10,000/-

Life time : 10 years

Savage value: Rs. 1,000/-

i.   Determine the depreciation charge and book value at the end of various years using the straight line method of depreciation.

ii.   Demonstrate the calculations of the declining balance method of depreciation by assuming 0.2 for K.

SECTION C (1 X 20 = 20)

1.   (i) There are three alternatives available to meet the demand of a particular product. They are as follows:

(a) Manufacturing the product by using process A

(b) Manufacturing the product by using process B

(c) Buying the product

The details are :

Fixed cost /year(Rs.) of Process A is Rs. 5,00,000/- & of Process B is Rs. 6,00,000/- ,

Variable cost/ unit(Rs.) of Process A is Rs. 175/- & of Process B is Rs. 150/- ,

where as the Purchase price/unit (Rs.) 125.

The annual demand of the product is 8,000 units.

Should the company make the product using process A or process B or buy it.

(ii) The failure rates of transistors in a computer are summarized in Table .

Failure Rates of Transistors in Computers

End of week	1	2	3	4	5	6	7
Probability of failure	0.07	0.18	0.30	0.48	0.69	0.89	1.00

The cost of replacing an individual failed transistor is Rs. 9. If all the transistors are replaced simultaneously, it would cost Rs. 3.00 per transistor. Any one of the following two options can be followed to replace the transistors:

(a) Replace the transistors individually when they fail (individual replacement policy).

(b) Replace all the transistors simultaneously at fixed intervals and replace the individual transistors as they fail in service during the fixed interval (group replacement policy).

Find out the optimal replacement policy.

OR

i. The beta drug company has purchased a capsulation machine for Rs. 20,00,000/-. The plant engineer expects the machine will last for 5 years and the savage value is Rs. 25,000/- at the end of useful years. Compute the depreciation schedule for the following methods.

    a)   Using the straight line method of depreciation.

    b)   Using sum of years digits method

ii. A company has purchased an equipment whose first cost is Rs. 1,00,000 with an estimated life of eight years. The estimated salvage value of the equipment at the end of its lifetime is Rs. 20,000.

    a)   Determine the depreciation charge and book value at the end of various years using the straight line method of depreciation.

    b)   Demonstrate the calculations of the declining balance method of depreciation by assuming 0.2 for K.