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Question Paper Code : 52707

B.E/B.Tech. DEGREE EXAMINATION, APRIL 2016

Eighth Semester

Mechanical Engineering

MG 2451/GE 1451/MG 81/10177 GE 009 – ENGINEERING ECONOMICS AND COST ANALYSIS

[Common to Production Engineering, Automobile Engineering and Materials Science and Engineering]

(Regulations 2008/2010)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

- 1.. What are the factors that affect supply curve ?
2. How will you define technical efficiency ?
3. What is Value Engineering ?
4. What is Time value of Money ?
5. What is rate of return method of evaluating projects ?
6. Write down the formula to obtain single payment compound amount.
7. What is Preventive Maintenance ?
8. What are the two types of Replacement problem ?
9. Why do we provide depreciation on Fixed Assets ?
10. What are the causes of depreciation ?

PART – B (5 × 16 = 80 Marks)

11. (a) (i) Trace out the flow of Goods, Services, Resources and Money payments in an Economy with a suitable sketch. (8)
- (ii) Differentiate between law of demand and law of supply. (8)

OR

- (b) What is break-even Analysis ? (4)

From the following figures extracted from the books of Beta Associates, find the following : (12)

- (a) Break-even Sales quantity.
- (b) The break-even Sales.
- (c) If the actual production quantity is 60,000, find : (i) Contribution and Margin of Safety.

Data :

Fixed Cost = ₹ 10,00,000

Variable cost per unit = ₹ 50

Selling price per unit = ₹ 100

12. (a) Describe the value engineering procedure. (16)

OR

- (b) (i) State the criteria for Make or buy decisions. (6)
- (ii) A company has extra capacity that can be used to produce a sophisticated fixture which it has been buying for ₹ 900 each. If the company makes the fixtures, it will incur materials cost of ₹ 300 per unit, Labour costs of ₹ 250 per unit and Variable overhead cost of ₹ 100 per unit. The annual fixed cost associated with the inused capacity is ₹ 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 ? (10)

13. (a) Arova Industry is planning to expand its production operation. It has identified two different technologies for meeting the goal. The initial outlay and annual revenues with respect to each of the technologies are summarised in the below given table. Suggest the best technology which is to be implemented based on the present worth method of comparison assuming 20% interest rate, compounded annually. (16)

	Initial outlay ₹	Annual Revenue ₹	Life (years)
Technology 1	6,00,000	2,00,000	10 years
Technology 2	10,00,000	3,00,000	10 years

OR

- (b) Consider the following two mutually exclusive alternatives :

	End of Year				
Alternative	0	1	2	3	4
A (₹)	25,00,000	10,00,000	10,00,000	10,00,000	10,00,000
B (₹)	22,50,000	9,00,000	9,00,000	9,00,000	9,00,000

At $i = 18\%$ select the best alternative based on future worth method of comparison.

14. (a) A firm is considering replacement of an equipment, whose first cost is ₹ 1,750 and the scrap value is negligible at any year. Based on experience, it was found that the maintenance cost is zero during the first year and it increases by ₹ 100 every year thereafter.
- (i) When should the equipment be replaced if $i = 0\%$?
- (ii) When should the equipment be replaced if $i = 12\%$?

OR

- (b) What are all the various types of Maintenance ? Evaluate their merits and demerits. (16)

15. (a) Himalaya Drug Company has just purchased a capsulating machine for ₹ 10,00,000. The plant engineer estimates that the machine has a useful life of 5 years and a salvage value of ₹ 10,000 at the end of its useful life. Compute the depreciation schedule for the machine by each of the following depreciation methods :

(i) Straight line method of depreciation. (8)

(ii) Sum-of-the years digits method of depreciation. (8)

OR

(b) Two mutually exclusive projects are being considered for investment. Project A1 requires an initial outlay of ₹ 15 lakhs with net receipts estimated as ₹ 4,50,000 per year for the next 5 years. The initial outlay for the project A2 is ₹ 30,00,000 and the net receipts have been estimated at ₹ 7,50,000 per year for the next seven years. There is no salvage value associated with either of the projects. Using the benefit cost ratio, which project would you select ? Assume an interest rate of 10%. (16)