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Question Paper Code : 72210

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2017.

Eighth Semester

Mechanical Engineering

MG 6863 — ENGINEERING ECONOMICS

(Regulations 2013)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State the law of supply and demand.
2. What is sunk cost?
3. Define value engineering.
4. What is effective interest rate?
5. What is future worth?
6. State the applications of rate of return method.
7. Define economic life of an asset.
8. Distinguish between challengers and defenders.
9. Define depreciation.
10. State the merits of annuity method of depreciation.

PART B — (5 × 16 = 80 marks)

11. (a) Explain the concept and scope of engineering economics.

Or

- (b) (i) Discuss opportunity cost. (4)
- (ii) Describe process planning. (12)

12. (a) (i) Discuss make or buy decisions. (6)
(ii) Explain value engineering procedure. (10)

Or

- (b) (i) Describe the functions and aims of value engineering. (8)
(ii) A company has to replace an asset after 10 years at an outlay of Rs. 5,00,000/-. It plans to deposit an equal amount at the end of every year for the next 10 years at an annually compounded interest of 20%. Find the equivalent amount to be deposited at the end of every year for the next 10 years. (8)

13. (a) (i) Explain present worth method. (6)
(ii) Data on two mutually exclusive investment options are as follows:

Alternative Cash flow in Lakhs of rupees at the end of year

	0	1	2	3	4
A	-45	20	20	20	20
B	-40	18	18	18	18

Find the best option taking 18% interest by future worth method. (10)

Or

- (b) A firm is diversifying into a new business. The life of the business is 10 years without any salvage value at the end of life. The initial outlay required is Rs. 20,00,000/- and the annual net profit estimated is Rs. 3,50,000/-. Find the rate of return for the new business. Check whether the business is worth for a cost of capital of 12%. (16)

14. (a) (i) Explain different types of maintenance. (12)
(ii) Differentiate between individual and group replacements. (4)

Or

- (b) Three years earlier Coimbatore Corporation purchased a 10 HP motor for pumping drinking water and its useful life was estimated as 10 years. But due to rapid development, it is unable to meet demand per water. The options available are either to augment the capacity with an additional 5 HP motor or to replace the existing 10 HP motor with a new 15 HP motor. The data on the two options are as follows.

Details of motors	Old 10 HP motor	New 5 HP motor	New 15 HP motor
Purchase cost (P) in Rs.	25,000	12,000	32,000
Life in years (n)	10	7	7
Salvage value at the end of machine life (Rs.)	1,500	800	5,000
Annual operating and maintenance cost (Rs.)	1,600	1,000	500

The current market value of the 10 HP motor is Rs. 15,000. Using an interest rate of 15% suggest the best alternative. (16)

15. (a) Two equipments are purchased each for Rs. 12,000/-. The estimated useful life is 5 years for both, the estimated scrap value for each equipment is Rs. 2,000/-. For one equipment the straight line method is used to calculate annual depreciation and for the other equipment, the reducing balance method is adopted. Compare the depreciation charges for both for all the 5 years. (16)

Or

- (b) A machine costs Rs. 5,00,000/-. Its annual operation cost during the first year is Rs. 40,000/- and it increases by Rs. 5,000/- every year thereafter. The maintenance cost during the first year is Rs. 60,000/- and it increases by Rs. 6,000/- every year thereafter. The resale value of the machine is Rs. 4,00,000/- at the end of the first year and it decreases by Rs. 50,000/- every year thereafter. Take an interest rate of 20%. Find the economic life of the asset. (16)