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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

September / October 2023 Supplementary Examinations

Programme: B.E. **Semester: IV**
Branch: Industrial Engineering and Management **Duration: 3 hrs.**
Course Code: 21IM4DCENE **Max Marks: 100**
Course: Engineering Economy

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT - I

1	a)	Explain the approach to problem solving and decision making.	**06**
	b)	An engineering economist solves problems and takes appropriate decisions using time honoured scientific method. Explain with a suitable diagram.	**04**
	c)	Suppose you borrow Rs 8000 now with a promise to repay the loan along with the interest in 4 years at 10% per year. How much money is accumulated at the end of 4 years?	**05**
	d)	For what period of time will Rs 5000 have to be invested to amount to Rs 6400 if it earns 8% simple interest per annum?	**05**

OR

2	a)	Briefly explain the time value of money.	**06**
	b)	Explain interest rate from Lenders point of view.	**06**
	c)	A storage facility is being leased under a contract of Rs. 2,00,000 per year with annual increases of Rs. 15,000 for 8 years. Payments are to be made at the end of each year, starting one year from now. If the prevailing interest rate is 7%, what lump sum paid today would be equivalent to the 8 years lease payment plan?	**08**

UNIT - II

3	a)	Enlist and explain any five conditions for present worth comparison.	**10**
	b)	Assets A1 and A2 have the capability of satisfactorily performing a required function. Asset A2 has an initial cost of Rs 3200 and an expected salvage value of Rs 400 at the end of its 4 year service life. Asset A1 costs Rs 900 less initially with an economic life 1 year shorter than that of A2; but A1 has no salvage value and its annual operating costs exceed those of A2 by Rs 250. When the required rate of return is 15%, state which alternative is preferred when comparison is by PW method , Use Repeated Project method.	**10**

UNIT - III

4	a)	Explain the situations for equivalent annual worth comparison.	**04**
	b)	The following data have been estimated for 2 mutually exclusive investment alternatives A and B, associated with a small engineering project for which revenues as well as expenses are involved. They have useful lives of 4 and 6 years respectively. If the MARR is 10% per year, show which feasible	**08**

alternative is more desirable by using annual equivalent worth method.

	A	B
Capital investment (Rs)	3500	5000
Annual Revenues (Rs)	1900	2500
Annual Expenses (Rs)	645	1020
Useful life(years)	4	6
Market value at end of useful life (Rs)	0	0

c) A company is planning to expand its business after 5 years from now. The money required for the expansion programme is Rs.4,00,00,000. What annual equivalent amount should the company deposit at the end of every year at an interest rate of 15% compounded annually to get rs.4, 00,00,000 after 5 years from now? **06**

OR

5 a) Explain misconceptions IRR. **08**

b) Cash flow for two mutually exclusive projects with 4 years lives and no salvage value are as follows: **12**

End of year	0	1	2	3	4
Project X	-1000	100	350	600	850
Project Y	-1000	1000	200	200	200

Use IRR method to compare the alternatives. Take i = 12%

UNIT - IV

6 a) Explain life cycle costing with a neat sketch. **06**

b) In detail classify the alternatives. **06**

c) The cost of a machine is Rs.6100 and its scrap value is Rs.100. the maintenance costs found from experience are as follows: **08**

Year	1	2	3	4	5	6	7	8
maintenance costs	100	250	400	600	900	1200	1600	2000

When should the machine be replaced? **04**

UNIT - V

7 a) Explain the different types of Lease decisions. **06**

b) Explain the different methods of costing. **10**

c) A certain piece of work is produced by a firm in batches of 100. The direct material cost for that 100 pieces of work is Rs 160 and direct labour cost is Rs 200. Factory overhead cost is 35% of total material and labour cost. Overhead charges are 20% of factory cost. Calculate prime cost and factory cost, if the management wants to make a profit of 10% on the gross profit, determine the selling price of each article.

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