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Question Paper Code 13430

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2025

Seventh Semester

Mechanical and Automation Engineering 20MUPE708 - ENGINEERING ECONOMIC ANALYSIS

Regulations - 2020

(Use of *Interest Tables* is permitted)

D	uration: 3 Hours Ma	x. Mar	ks: 10	00
	$PART - A (MCQ) (10 \times 1 = 10 Marks)$	14.1	<i>K</i> –	CO
	Answer ALL Questions	Marks	Level	CO
1.	Engineering Economic analysis is used to answer	1	<i>K1</i>	CO1
	(a)Which engineering projects are worthwhile?			
	(b) How should the engineering projects be designed			
	(c) How to achieve long term financial goals?			
	(d) All the above			
2.	The benefit that is forgone cost by engaging a business resource in a chosen activity	y 1	<i>K1</i>	CO1
	instead of engaging that same resource in the forgone activity is called as			
	(a) Marginal cost (b) Opportunity cost (c) Incremental cost (d) Forgone cost			
3.	The term 'value' in value engineering refers to	1	<i>K1</i>	CO2
	(a) total cost of the product (c) utility of the product			
	(b) selling price of the product (d) manufactured cost of the product			
4.	A company is considering the purchase of a machine for Rs 50000. If the company		<i>K</i> 2	CO2
	purchases the machine now, the equivalent future amount in year 4 that the company i	S		
	paying for the machine at 4% per year interest is			
	(a) Rs 53362 (b) Rs 56565 (c) Rs 58492 (d) Rs 60203	_		
5.	Net present worth for an alternative is equal to	1	K1	CO3
	(a) Present worth (benefits) (c) Present worth (benefits) - Present worth (cost)			
_	(b) Present worth (cost) (d) Present worth (cost) - Present worth (benefits)		17.1	<i>c</i> o2
6.	Assuming annual interest of i%, If initial present sum is P and required end-of-period	d^{-1}	K1	CO3
	withdrawal is of A forever without diminishing initial sum P, then P and A are related as.			
7	(a) $P = Ai$ (b) $A = Pi$ (c) $P = A(i+1)$ (d) $A = P(i+1)$	1	K1	CO4
7.	In replacement Analysis, Challenger is defined as	1	K I	C <i>04</i>
	(a) Existing asset being considered for replacement (c) Asset no longer in use			
0	(b) Asset proposed to be replacement (d) Asset with zero salvage value	1	K1	CO4
8.	If belt of an electric motor is broken, it needs	1	ΚI	CO4
	(a) Corrective maintenance(b) Timely maintenance(c) Scheduled maintenance(d) Preventive maintenance			
9.	The main object of providing depreciation is to	1	K1	CO5
9.	(a) Calculate true profit (c) reduce tax	1	***	005
	(b) To show true financial position (c) reduce tax (d) provide funds for replacement			
10.	Under the diminishing balance method, depreciation is calculated on	1	<i>K1</i>	CO5
10.	(a) Scrap value (b) original value (c) book value (c) None of them			
	(a) Serup value (b) original value (c) book value (c) tone of them			
	$PART - B (12 \times 2 = 24 Marks)$			
	Answer ALL Questions			
11.	Write the objectives of Engineering Economics.	2	<i>K1</i>	CO1
12.	State the various factors that affect the supply curve.	2	K2	CO1
13.	What is a break even Chart?	2	<i>K1</i>	CO1

14.	4. A person deposits a sum of Rs.20, 000 at the interest rate of 18% compounded annually							CO2		
	for 10									
15.	Expla	g ROI.	2	<i>K</i> 2	CO2					
16.	List tl		2	<i>K1</i>	CO2					
			worth method of comparison?			2	<i>K1</i>	CO3		
18.	Defin	e the basic	es of rate of return in a business	environment.		2	<i>K1</i>	CO3		
19.	What	is Breakd	own maintenance?			2	<i>K1</i>	CO4		
		_	ween Challengers and Defenders	s.		2	<i>K</i> 2	CO4		
			is methods of Depreciation.			2	K1	CO5		
22.	Defin	e Inflation				2	K1	CO5		
				\times 11 = 66 Marks)						
				LL Questions						
23.	a)	Illustrate	table example.	11	K2	CO1				
	b)	b) Explain the concepts of break-even analysis with clear diagram.								
24.	a)	Summari	sion and its approaches.	11	K2	CO2				
	b)	Demonst	11	K2	CO2					
		(i) Equal								
25.	a)	a) A company must decide whether to buy machine A or machine B:								
				Machine A	Machine B					
			Initial Cost	Rs. 4,00,000	Rs.8,00,000					
			Useful life in years	4	4					
			Salvage value at the end of machine life	Rs. 2,00,000	Rs.5,50,000					
			Annual maintenance cost	Rs. 40,000	0					
		At 12% i								
		At 12% interest rate, which machine should be selected? (Use future worth method of comparison).								
	OR									
	b)	Illustrate	the steps involved in the ann	ual equivalent met	hod for cost dominated	11	<i>K</i> 2	CO3		
	,	and flow discuss with witchle arounds								

- b) Illustrate the steps involved in the annual equivalent method for cost dominated 11 K2 COS cash flow diagram with suitable example.
- 26. a) Develop in detail (i) the mode of recovery of capital and return (ii) the simple 11 K3 CO4 probabilistic model for items which fail completely with suitable applications.

b) Two years ago, a machine was purchased at a cost of Rs. 2,00,000 to be useful for eight years. Its salvage value at the end of its life is Rs. 25,000. The annual maintenance cost is Rs. 25,000. The market value of the present machine is Rs. 1,20,000. Now, a new machine to cater to the need of the present machine is available at Rs. 1,50,000 to be useful for six years. Its annual maintenance cost is Rs. 14,000. The salvage value of the new machine is Rs. 20,000. Using an interest rate of 12%, find whether it is worth replacing the present machine with the new

27. a) The Alpha Drug Company has just purchased a capsulation machine for Rs. 11 K3 CO5 20,00,000. The plant engineer estimates that the machine has a useful life of five years and a salvage value of Rs. 25,000 at the end of its useful life. Compute the depreciation schedule for the machine by each of the following depreciation methods: (a) Straight line method of depreciation (b) Sum-of-the-years digits method of depreciation (c) Double declining balance method of depreciation.

OR

11

K3 CO4

machine.

	b)	Explain with suitable industrial applications the (a) causes of inflation and (b) effect of inflation	11	К3	CO5
28.	a) (i)	Enumerate the various causes for replacement of assets.	6	K2	CO4
	(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. Determine the depreciation charge and book value at the end of various years using the straight line method of depreciation.	5	K2	CO5
		OR			
	b) (i)	Differentiate between individual and group replacements.	6	<i>K</i> 2	CO4

- - (ii) Discuss the various methods of depreciation.