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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Sixth Semester, B.E. - Industrial and Production Engineering

Semester End Examination; July / Aug. - 2022

Engineering Economics

Time: 3 hrs *Max. Marks: 100*

Course Outcomes

The Students will be able to:

CO1: Understand the fundamentals of Engineering economics.

CO2: Compare the various projects using present worth/ equivalent annual worth methods.

CO3: Compute the rate of return of the project son depreciation charges of the machine / equipment.

CO4: Analyze the various alternatives and criteria of replacement. Sources of capital and predict the effect of inflation on it.

CO5: Estimate the cost of production/process and judging the breakeven point.

***Note**: I) **PART - A** is compulsory. **Two** marks for each question.*

*II) **PART - B**: Answer any **Two** sub questions (from a, b, c) for a Maximum of **18 marks** from each unit.*

Q. No.		Questions	Marks	BLs	COs	POs
		I : PART - A	**10**			
I	a.	Define tactics and strategy.	2	L1	CO1	PO1
	b.	List the consideration of asset life.	2	L1	CO2	PO1
	c.	Discuss physical and technological depreciation.	2	L1	CO3	PO1
	d.	Define inflation.	2	L1	CO4	PO1
	e.	Define direct and indirect labour with respect to components of cost.	2	L1	CO5	PO1
		II : PART - B	**90**			
		UNIT - I	**18**			
1	a.	Explain; i) Problem solving and decision making process. ii) Intuition and analysis.	9	L2	CO1	PO1
	b.	A person wants to gift a car to his daughter when she would turn 18 years, six years from now. He decides to put away money in her name during her next six birthdays. He wants to deposit Rs. 25000/- in the first year and go on increasing it by Rs. 5000/- every year for the next 6 years. If he estimates that a car would cost Rs5lakhs when he wants to buy one, how much more money should be added to maturity amount that he receives from Bank, if it is assume to grow at 11.5% compounded annually?	9	L1	CO1	PO2
	c.	A person wants to give scholarship to poor student to the tune of Rs. 25,000/- every year, in memory of his late father. He wants to deposit a lump sum in the bank which makes in receive the required amount every year for the next 20 years. The reserve is assumed to grow annually at the rate of 9%. Find a single payment that must be made now as the reserve amount?	9	L2	CO1	PO1

Contd… 2

UNIT - II **18**

2 a. List the different conditions required for present worth comparisons. 6 L1 CO2 PO1

b. Rupees 10 crores was granted by management of an engineering college for the construction of its new mechanical science block, annual maintenance for the block is estimated to be Rs. 10 lakh. In addition, Rs. 12 lakh will be needed every 10 years for painting and major repairs. If the budget has to take care of perpetual maintenance, how much of the amount can be used for initial construction cost? Deposited funds can earn 6% rate of interest, compounded annually. Assume that risk and inflation do not come into picture. 12 L2 CO2 PO2

c. Publishing house wants to purchase and offset printing press. Three dealers have responded to the tender called whose particular are given in the table. Determine the best alternative based on the annual equivalent method by assuming $i = 12.5\%$ compounded annually. 12 L2 CO2 PO2

Manufacturer	Down payment Rs.	Yearly equivalent installment	Salvage value	No. of years of payment and life
X	8,00,000	2,25,000	0	10
Y	7,00,000	2,00,000	0	10
Z	5,00,000	2,50,000	0	10

UNIT - III **18**

3 a. Explain the following:

i) MRR

ii) IRR

iii) ERR 9 L2 CO3 PO1

b. A farm house can be purchased for Rs. 90,000/- and the expected resale value after 20 years is Rs. 60,000/-. If the annual rental income is Rs. 11,800/- and expenses Rs. 4,700/-. What will be the rate of return earned on this farm house? 9 L2 CO3 PO2

c. A CNC machine cause Rs. 30,00,000/- is estimated to serve 8 years after which its Salvage value is estimated to be Rs 2,50,000.

Find; i) Depreciation fund at the end of the 5^{th} year by fixed percentage method and declining balance method.

ii) Book value of machine after 4^{th} year and 6^{th} year by declining balance method. 9 L1 CO3 PO2

Contd… 3

	UNIT - IV	**18**		
4 a.	Explain the major reason for replacement of equipment?	9	L4	CO4 PO1
b.	Explain any three causes of inflation with suitable example.	9	L2	CO4 PO1
c.	Summarize your understanding on 'types of capital'	9	L2	CO4 PO1
	UNIT - V	**18**		
5 a.	Explain the concept of B.E.A (Break Even Analysis) with suitable illustration.	9	L2	CO5 PO1
b.	Determine selling price of a gear wheel from the following data: i) Number of gear wheels produced is 200 ii) Labour cost Rs. 2500/- iii) Material cost Rs. 3800/- iv) Factory overheads 40% of direct cost v) Administrative and selling overheads 25% of factory cost vi) Profit of 30% of the total cost	9	L4	CO5 PO1
c.	Find the factory cost of the forge hammer made from solid cast iron press of circular cross section of 30 cm diameter and 160 cm length. The casting and machine time taken to make press is 150 minutes and labour rate is Rs. 22/- per hour. Factory overheads are 40% of the direct labour cost. The density of material is 6.8gm/cm^3 and the cost of the material is Rs. 12/kg.	9	L1	CO5 PO2

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