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

Autonomous Institute Affiliated to VTU

July 2023 Semester End Main Examinations

Programme: B.E.   Semester: VI

Branch: ECE / ETE   Duration: 3 hrs.
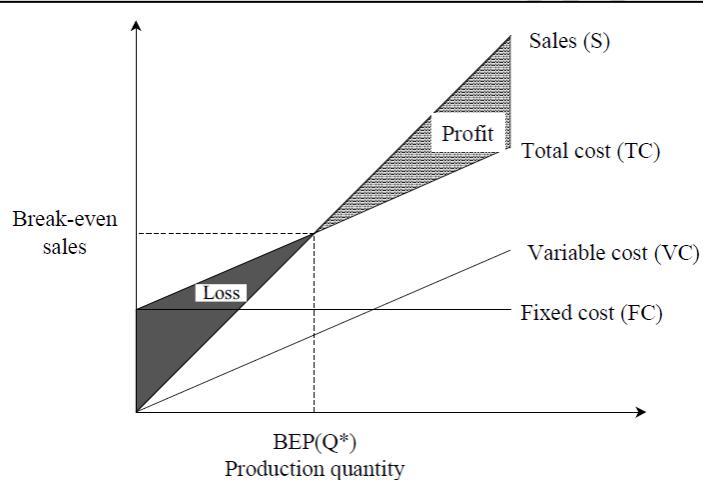
Course Code: 19GC6HSEEC   Max Marks: 100

Course: Engineering Economics   Date: 14.07.2023

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

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

			UNIT - I	CO	PO	Marks
1	a)		A plot of Break-Even analysis is as shown below. In this plot slope of the sales line is 200 and slope of the Total Cost Line is 100. Also in the plot, level of straight line with slope zero indicates 20,00,000. Find the (i) Break-Even sales quantity (ii) The break-even sales (iii) If the actual production quantity is 60,000 find contribution (iv) Margin of safety using Method-1 (v) Margin of safety using Method-2	CO2	PO1	10
	b)		Inspect the law of supply and demand in detail considering any two examples.	CO1		10
			UNIT - II			
2	a)		Explain the steps in the process planning.	CO1		06
	b)		Two alternatives are under consideration for a hexagonal bolt fastening pin. Either design will serve equally well and will involve the same material and manufacturing cost except for the lathe and grinder operations. Design A will require 20 hours of	CO2	PO1	08

			lathe time and 8 hours of grinder time per 10,000 units. Design B will require 10 hours of lathe time and 22 hours of grinder time per 10,000 units. The operating cost of the lathe including labor is Rs. 400 per hour. The operating cost of the grinder including labour is Rs. 300 per hour. Which design should be adopted if 10,00,000 units are required per year and what is the economic advantage of the best alternative?			
	c)	How a building material is selected? Explain.	*CO1*		**06**

UNIT - III

3	a)	A company has to replace a present facility after 15 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 15 years at an interest rate of 18% compounded annually. Find the equivalent amount that must be deposited at the end of every year for the next 15 years.	*CO2*	*PO1*	**08**
	b)	Compare value analysis and value engineering	*CO3*	*PO2*	**06**
	c)	Discuss the aims of value engineering.	*CO1*		**06**

OR

4	a)	What are the types of functions? Explain them with examples.	*CO1*		**08**
	b)	Discuss in detail the procedure of value engineering.	*CO1*		**12**

UNIT - IV

5	a)	Compare revenue dominated cash flow and cost dominated cash flow	*CO3*	*PO2*	**08**
	b)	A project involves an initial outlay of Rs. 30,00,000 and with the following transactions for the next five years. The salvage value at the end of the life of the project after five years is Rs.2,00,000. Draw a cash flow diagram of the project and find its present worth by assuming $i = 15\%$, compounded annually.	*CO3*	*PO2*	**12**

End of year	Maintenance and operating expense	Revenue (Rs.)
1	2,00,000	9,00,000
2	2,50,000	10,00,000
3	3,00,000	12,00,000
4	3,00,000	13,00,000
5	4,00,000	12,00,000

OR

6	a)	The cost of erecting an oil well is Rs. 1,50,00,000. The annual equivalent yield from the oil well is Rs. 30,00,000. The salvage value after its useful life of 10 years is Rs. 2,00,000. Assuming an interest rate of 18%, compounded annually, find out whether the erection of the oil well is financially feasible, based on the present worth method.	*CO3*	*PO2*	**10**

				CO	PO	Marks
		b)	The details of the feasibility report of a project are as shown below. Check the feasibility of the project based on present worth method, using i = 20%. Initial outlay = Rs. 50,00,000 Life of the project = 20 years. Annual equivalent revenue = Rs. 15,00,000 Modernizing cost at the end of the 10th year = Rs. 20,00,000 Salvage value at the end of project life = Rs. 5,00,000.	CO3	PO2	**10**
			UNIT -V			
	7	a)	With the definition of economic life of equipment, discuss the reasons for replacement.	CO1		**06**
		b)	A firm is considering replacement of an equipment, whose first cost is Rs. 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 Rs. 100 every year thereafter. (a) When should the equipment be replaced if i = 0%? (b) When should the equipment be replaced if i = 12%?	CO2	PO1	**08**
		c)	Distinguish between breakdown maintenance and preventive maintenance.	CO1		**06**

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