Program/Course: B. Tech. Semester 1/2

Name of the subject: Principles of Engineering Economics and Management

Subject Code: HSMC-103

Paper ID: 15928

Time Allowed: 03 Hours

2 1 SEP 2022

Max. Marks: 60

- 1) Parts A and B are compulsory
- 2) Part C has two questions. Q8 and Q9. Both are compulsory, but with internal choice.
- 3) Use of scientific calculator is allowed.

Part-A

Q.1

- a) Define: (i) Direct Cost (ii) Marginal Productivity
- b) Explain the meaning of Indifference Curves.
- c) Define (i) Contribution (ii) Margin of Safety
- d) Indicate the major principles of management given by Fayol
- e) What is Giffen's paradox?
- f) Explain the internal and external economies of scale. Why internal economies are called real economies?

Part-B

- Q.2 Explain the Law of Variable Proportion, what are the assumptions behind the law?
- Q.3 What is the meaning of E O Q?

Calculate E O Q when:

Annual consumption =

6000 units

Ordering Cost per order =

Carrying Cost =

Rs 30 Rs 1.

Q.4 A company is considering the purchase of a machine. Two models of the machine are available each costing Rs 40, 000/- Earning after tax but before depreciation are expected to be as follow:

Year	Cash inflows (Rs)			
	Model I	Model II		
1	10,000	5,000	***************************************	
2	15,000	15,000		
3	20,000	20,000		
4	10,000	15,000		

Evaluate the two models on the basis of Pay Back Period and recommend which model should be purchased?

Q.5 "The elasticity of demand in a market is great or small according as the amount demanded increases much or little for a given fall in price, and diminishes much or little for a given rise in price". Elaborate and explain the relationship between price and demand.

Q.6 Explain the principles of Scientific management.

Q.7 What factor need to be considered in replacement decisions?

Part-C

Q.8 What is Internal Rate of Return? Why is it considered superior method of project evaluation compared to other methods?

Or

From the following data (i), Calculate total cost, average cost and marginal cost. Fixed cost is Rs 256.

Output	Total Variable Cost (Rs)	
7	178	
8	224	
9	302	
10	400	

- (ii) Show the behaviour of average cost and marginal cost with increase in the output.
- Q.9 Explain in detail the modern theory of Factor Pricing.

Or

(i) What is the meaning of Net Present Value?

(ii) A company is considering the purchase of a machine. Two machines are available with the following details:

Items	Machines		
	X (Rs)	Y (Rs)	
Cost	10,000	10,000	
Net earnings after tax:			
1 st Year	8,000	2,000	
2 nd Year	6,000	7,000	
3 rd Year	4,000	10,000	
Life of the machines	<u> </u>	<u> </u>	
X=3 years			
Y= 3 years	, ·		

The P.V. factor at 10% of a rupee earned is 0.909 (First year), 0.826 (Second year), 0.751 (Third year)

Assume that there is no scrap value. You are advised to recommended which machine should be purchased on the basis of Net Present Value.
