MAR ATHANASIUS COLLEGE OF ENGINEERING, KOTHAMANGALAM – 686 666.

(GOVERNMENT AIDED AUTONOMOUS ENGINEERING COLLEGE**)**

DEPARTMENT OF MECHANICAL ENGINEERING

B24ME3T05 – INDUSTRIAL AND SYSTEM ENGINEERING - S5 MA

SECOND SESSIONAL EXAMINATION, OCTOBER 2026

Time –1.5 Hours **Max: 40 Marks**

PART-A

Answer All Questions (3 marks X 4=12 Marks)

1 Differentiate between a Flow Process Chart and an Operation Process Chart.

2 Explain the concept of waste in Lean Manufacturing

3 Define product life cycle and explain its major stages.

4 A worker takes an average observed time of 6 minutes to complete a job. The performance rating is 120% and the allowances are 15% of normal time. Determine the normal time and standard time.

PART - B

Answer All Questions. (14 marks X 2=28 Marks)

5 a) Explain the principles of motion economy and discuss their application in improving workplace efficiency.

b) Explain the basic elements of Lean Manufacturing and discuss how they contribute to improving manufacturing performance.

6 A manufacturer has to supply his customers 3600 units of his product per year. Shortages are not permitted. Inventory carrying cost amounts Rs. 1.2 per unit per annum. The set-up cost per run is Rs. 80. Find: (i) Economic order quantity. (ii) Optimum number of orders per annum. (iii) Average annual inventory cost (minimum). (iv) Optimum period of supply per optimum order.

VISION

Mentoring to Ensure Excellence

MISSION

- To facilitate comprehensive and integrated development of students by providing quality education that encourages sustainable practices
- To mold disciplined and socially committed engineers capable of assuming professional leadership upholding national integrity

Question No.	1	2	3	4	5a	5b	6a	Max. Marks
CO Mapping	2	3	4	3	3	4	3	
Blooms Taxonomy level	2	2	2	3	2	2	3	
Marks	3	3	3	3	7	7	14	30

	Prepared by	Scrutinized by	Approved by HOD
Name	Dr. Sabu Kurian (Faculty Member)	Dr. Brijesh Paul (Stream Coordinator)	Dr. Cibu K. Varghese (HOD)
Signature			

MAR ATHANASIUS COLLEGE OF ENGINEERING, KOTHAMANGALAM – 686 666.

(GOVERNMENT AIDED AUTONOMOUS ENGINEERING COLLEGE)

DEPARTMENT OF MECHANICAL ENGINEERING

SECOND SESSIONAL EXAMINATION, OCTOBER 2026

B24ME3T05 – INDUSTRIAL AND SYSTEM ENGINEERING - S5 MA

Time – 1.5 Hours **Max: 30 Marks**

SCHEME OF VALUATION

PART A

1. 3 points - marks
2. Description 3 marks
3. Definition – 1 mark, Explanation – 2 marks
4. Normal Time – 2 marks, Standard time – 1 mark

PART B

5. a) Principle of motion economy - 4 marks, Application – 3 marks
   b) Basic Elements – 4 marks, Contribution – 3 marks
6. (i) Economic order quantity – 4 marks (ii) Optimum number of orders per annum - 3 marks (iii) Average annual inventory cost (minimum) – 4 marks. (iv) Optimum period of supply per optimum order – 3 marks

	Prepared by	Scrutinized by	Approved by HOD
Name	Dr. Sabu Kurian (Faculty Member)	Dr. Brijesh Paul (Stream Coordinator)	Dr. Cibu K. Varghese (HOD)
Signature			