Register No.: ………………………   Name: …………………………………………………………

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

FIFTH SEMESTER B.TECH DEGREE EXAMINATION (Regular), DECEMBER 2022
MECHANICAL ENGINEERING
(2020 SCHEME)

Course Code :   **20MET305**

Course Name: **Industrial and Systems Engineering**

Max. Marks :   **100**   **Duration: 3 Hours**

PART A
(Answer all questions. Each question carries 3 marks)

1. Explain the significance of product life cycle.
2. List the steps of new product development process.
3. Explain the philosophy of JIT.
4. Define unit load in material handling
5. Explain the importance of Communication in Industry.
6. Describe direct and indirect cost associated with inventory management.
7. List the stages of 5S system.
8. What are the various approaches to enhance ability in manufacturing?
9. Enumerate any six benefits of ERP implementation
10. Explain the concept of 'Business Intelligence.

PART B
(Answer one full question from each module, each question carries 14 marks)

MODULE I

11. a) Explain the functions of Industrial Engineering.   (7)
    b) Define ergonomics and what are its objectives?   (7)
       How ergonomics finds application in work system design?

OR

12. a) Consider the following data of a company for the year 2021.   (7)
       Selling price per unit = Rs.250, Fixed Cost= Rs. 3,00,000,
       Variable Cost per unit = Rs.150.
       If actual production quantity is 6000, find (i) Break-even
       quantity, (ii) Break-even sales and (iii) Contribution.
    b) Explain the following: (i) Standardization (ii) Simplification and   (7)
       (iii) Diversification

MODULE II

13. Classify and explain the various material handling equipment with the help of simple sketches. (14)

OR

14. a) ABC auto uses 5000 tyres per year. Each time an order for tyre is placed, an ordering cost of Rs 50 is incurred. Each tyre costs Rs 4000, and the holding cost is Rs 2/tyre/year. Assume that the demand occurs at a constant rate and shortages are not allowed. What is the EOQ? Calculate total cost and number of orders per year? (7)

   b) Differentiate between P system and Q system with help of diagrams. (7)

MODULE III

15. a) Explain the cause and effects of industrial dispute and how it can be settled. (7)

   b) Elaborate on worker's participation in management. (7)

OR

16. a) Explain the functions of trade unions in detail with help of recent incidents in our country. (7)

   b) What is industrial fatigue and list its effects.
   What are the methods to eliminate fatigue? (7)

MODULE IV

17. a) Explain the seven wastes in lean manufacturing and describe the methods of eliminating them. (7)

   b) Compare conventional manufacturing with lean manufacturing. (7)

OR

18. a) Write short notes on value stream mapping. (7)

   b) Explain the concept of 'Agile manufacturing.
   What are the steps to become agile by an ordinary firm? (7)

MODULE V

19. a) Explain the concept of Business Process Reengineering. (7)

   b) Describe the concept of supply chain management, with the help of a practical example. (7)

OR

20. a) Describe the key process of Customer Relationship Management. (7)

   b) Explain OLAP. (7)
   Briefly describe one practical application of OLAP (Illustrate with a suitable example).

****