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

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)
(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

FIFTH SEMESTER B.TECH DEGREE EXAMINATION (S), FEBRUARY 2024
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. List out three fields of application of Industrial Engineering.
2. Define the term prototype in product design.
3. Enlist any three factors to be considered in the design of material handling system.
4. Define the term quantity discount.
5. Explain the types of costs associated with accidents.
6. Classify the types of communication in industries.
7. List the steps involved in 5S methodology.
8. Describe the characteristics of agile manufacturing.
9. List the functions of Business intelligence.
10. Define the process of Data Mining.

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

11. a) Explain the major functions of Industrial Engineering. (8)
    b) Describe the terms standardization, simplification and diversification with examples. (6)

OR

12. a) Explain the term product life cycle with a neat graphical representation and suitable examples. (8)
    b) A product sold for ₹ 20 per unit has a fixed cost equal to ₹ 75,000 and variable cost ₹ 5 per unit. Find: (i) The number of units to be produced to break even. (ii) No. of units to be produced to get a profit of ₹ 15,000. (iii) The profit or loss, if 9,000 units are produced and sold. (6)

MODULE II

13. a) With the help of a neat diagram explain the concept of Economic Order Quantity and derive an expression for calculating EOQ. (10)
    b) Explain any two principles of material handling. (4)

OR

14. a) The demand for a product is 10,000 units of product annually. The unit cost is Rs.2 and it costs Rs. 64 to place an order. The inventory carrying cost is estimated at 16% of average inventory investment. (8)
Determine (i) EOQ (ii) Optimum number of orders to be placed per annum. (iii) Minimum total cost of inventory.

    b) Describe the types of values, with examples, in value analysis. (6)

MODULE III

15. a) Describe the causes and effects of industrial disputes and methods of eliminating them. (9)

    b) Define industrial accidents and its effect on productivity. (5)

OR

16. a) List any five objectives of Trade union. (5)

    b) Describe WPM (Workers' Participation in Management), illustrating the benefits for the functional effectiveness of an organization. (9)

MODULE IV

17. a) Explain the seven wastes of lean manufacturing. (10)

    b) Differentiate between Muda (waste), Mura (unevenness) and Muri (overburden). (4)

OR

18. a) Explain the philosophies of Kanban and Kaizen. (8)

    b) Compare traditional and lean manufacturing paradigms. (6)

MODULE V

19. a) Differentiate between e-commerce and e-business. (6)

    b) Illustrate and explain the basic elements of a data warehouse architecture. (8)

OR

20. a) Illustrate and explain the key features of OLAP (Online Analytical Processing). (7)

    b) Explain the main processes of CRM (Customer Relationship Management). (7)

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