

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
EIGHTH SEMESTER B.TECH DEGREE EXAMINATION(S), OCTOBER 2019

**Course Code: ME404**  
**Course Name: INDUSTRIAL ENGINEERING**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer any three full questions, each carries 10 marks.*

Marks

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|---|--|-----|
| 1 | a) What are the human factors to be considered while designing a new product? Explain with an example.   | (3) |
|   | b) What is the importance of 'standardization' and 'simplification' in product development and design?   | (4) |
|   | c) Explain the use of prototype in product development.  | (3) |
| 2 | a) What are the functions of Industrial Engineering?   | (3) |
|   | b) Describe the procedure followed while designing a product.  | (3) |
|   | c) A company manufactures ball-point pens that can be sold at Rs. 15 per piece. Variable cost of the pen is Rs. 10 per unit. If the company has made a total investment in fixed cost to the tune of Rs. 30000, what is the break-even sale for the pen? | (4) |
| 3 | a) Describe different types of plant layouts with sketch. Which type of layout should be used for a cotton mill? Why?  | (4) |
|   | b) Describe the factors to be considered in the design of material handling system.  | (3) |
|   | c) How depreciation is considered in replacement problems?   | (3) |
| 4 | a) What are the criteria for the choice of a type of material handling equipment?  | (3) |
|   | b) Explain MAPI method.  | (3) |
|   | c) What is break down maintenance? What are its limitations?   | (4) |

**PART B**

*Answer any three full questions, each carries 10 marks.*

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|---|--|-----|
| 5 | a) Discuss the objectives of method study  | (3) |
|   | b) Explain Operation Process Chart   | (3) |
|   | c) Write short note on SIMO Chart, Cronocycle graph and cycle graph                | (4) |
| 6 | a) Objectives of job evaluation and merit rating and different merit rating method | (4) |
|   | b) List out various performance rating method                                      | (3) |
|   | c) Factors involved in selection of job in any industry                            | (3) |
| 7 | a) Discuss significance of industrial relations in business environment            | (4) |
|   | b) Causes and effects of industrial disputes and how it can be eliminated          | (3) |

- c) Method of elimination of fatigue and its effect in industry (3)
- 8 a) Types of communication in industry and how it affect productivity (2)
- b) Need for Workers participation in management Various forms of workers participation in management (4)
- c) Characteristics of collective bargaining and explain safety programme and safety committee (4)

**PART C**

*Answer any four full questions, each carries 10 marks.*

- 9 a) What are the major functions of Production planning and control? (3)
- b) With the help of a neat diagram illustrate the PLC concept. Comment on each phases of the PLC. (4)
- c) What are the various production systems? How they are classified? (3)
- 10 a) With the help of a neat diagram explain the cellular manufacturing system. (3)
- b) Differentiate between aggregate planning and master scheduling.? (4)
- c) Derive the basic EOQ model and list the various assumptions on which it works. (3)
- 11 a) How inventories are classified and costs associated by inventories? (3)
- b) A manufacturer has to supply 10,000 units of product annually. The unit cost is Rs. 2 and it costs Rs.36 to place an order. The inventory carrying cost is estimated at 9% of average inventory investment. Determine 1. EOQ 2.Optimum number of orders to be placed per annum. 3.Minimum total cost of inventory (4)
- c) List out the major selective inventory control techniques and give a detailed description of any one technique. (3)
- 12 a) Differentiate between 100% inspection and sampling with suitable examples. (3)
- b) What are the applications of control charts? (3)
- c) What are the components of process capability? Write short notes on any two indices used to measure the same. (4)
- 13 a) State the advantages of using statistical methods for quality control? (3)
- b) Define the term reliability. What are the different configurations related to system reliability? Give a detailed description of any two with the help of an example. (4)
- (c) With proper illustration explain the how Gantt charts are employed tracking the progress of activities in an industry? (3)
- 14 a) Explain the various dimensions of TQM and Six Sigma concept. (4)
- b) Give an account of the major features of ISO9000 quality system. (3)
- c) Describe the concept of quality circle. What are its objectives and benefits? (3)

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