

II B. Tech II Semester Regular/Supplementary Examinations, July - 2023
INDUSTRIAL ENGINEERING AND MANAGEMENT
(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions each Question from each unit
All Questions carry **Equal** Marks

~~~~~

## UNIT-I

- 1 a) Enumerate the differences between production management and industrial engineering. [7M]  
b) Discuss the concept of theory "X" and theory of "Y". [7M]

## OR

- 2 a) Discuss the role of an industrial engineer in Process Management. [7M]  
b) Explain the Taylor's principles of management. [7M]

## UNIT-II

- 3 a) Define plant layout. Describe the objectives of good plant layout. [7M]  
b) Enumerate the differences between preventive and breakdown maintenances. [7M]

## OR

- 4 a) Name and describe various tools and techniques used in plant layout planning. [7M]  
b) Write short notes on the following in connection with the preventive maintenance: [7M]  
(i) Objectives (ii) Advantages

## UNIT-III

- 5 a) Explain the following terms: [7M]  
(i) Performance rating (ii) Normal Time (iii) Standard time  
b) Define time study. Name the time study experiments and explain briefly the utility of each of them. [7M]

## OR

- 6 a) Outline the general procedure for a work sampling study to determine the extent of delays and personal time. [7M]  
b) Discuss the micro-motion study method in detail. [7M]

## UNIT-IV

- 7 a) Define the term "quality" and state the various factors which affect product quality. [7M]  
b) Differentiate between "variable charts" and "attribute charts". [7M]

## OR

- 8 In a factory producing spark plug the number of defectives found in inspection of 20 lots of 100 each, is given below: [14M]

| Lot No.           | 1 | 2  | 3  | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|-------------------|---|----|----|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|
| No. of defectives | 5 | 10 | 12 | 8 | 6 | 4 | 6 | 3 | 3 | 5  | 4  | 7  | 8  | 3  | 3  | 4  | 5  | 8  | 6  | 10 |

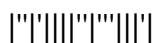
Construct appropriate control chart and state whether the process is in statistical control.

## UNIT-V

- 9 a) Define value analysis? Describe clearly the objectives of value analysis. [7M]  
b) Explain the critical evaluation of different merit rating methods. [7M]

## OR

- 10 a) What is Industrial Relations? Explain it. [7M]  
b) Enumerate the differences between personnel & industrial relations and HRM. [7M]



**II B. Tech II Semester Regular/Supplementary Examinations, July - 2023**  
**INDUSTRIAL ENGINEERING AND MANAGEMENT**  
(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions each Question from each unit  
All Questions carry **Equal** Marks

~~~~~  
UNIT-I

- 1 a) Describe the contributions of Taylor for scientific management and how it leads to the concept of scientific management. [7M]
b) Explain how does industrial engineering help to increase the productivity of an organization. [7M]

OR

- 2 a) Explain about Fayol's principles of management. List its advantages. [7M]
b) What is productivity? Explain various factors affecting productivity. [7M]

UNIT-II

- 3 a) Describe in brief the procedure of breakdown maintenance. [7M]
b) Describe the various procedural steps in planning the plant layout for a new plants. [7M]

OR

- 4 a) Name the various types of plant layout and describe the process layout with its advantages and limitations. [7M]
b) Explain the following in connection with preventive maintenance: [7M]
(i) Planning and scheduling ii) Records and analysis

UNIT-III

- 5 a) Enumerate the differences between PMTS and MTM. [7M]
b) Define work sampling. State its applications, advantages and disadvantages [7M]

OR

- 6 a) How does work sampling differ from stop watch time study? Explain the accuracy of the two methods equal? [7M]
b) Explain the principles of Ergonomics and its importance. [7M]

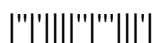
UNIT-IV

- 7 Plot the control chart \bar{X} and R using the following sample data and a sample size of five. From the chart find whether the process is in control. [14M]

Sub group No.	1	2	3	4	5	6	7	8	9	10
\bar{X}	5.004	5.204	5.014	5.008	2.009	5.016	5.030	5.010	5.016	2.010
R	0.02	0.08	0.03	0.05	0.04	0.09	0.04	0.04	0.05	0.07

OR

- 8 a) Define total quality management (TQM). State and explain the guiding principles of TQM. [7M]
b) What is the meaning of quality of conformance? Explain the factors which influence quality of conformance. [7M]



Code No: R2022034

R20

SET - 2

UNIT-V

- 9 a) Describe briefly about the various job evaluation techniques. [7M]
b) Discuss briefly about the functions of personnel management. [7M]

OR

- 10 a) List out the main benefits and limits of job evaluation. [7M]
b) Explain the enterprise resource planning process with flow chart? [7M]



II B. Tech II Semester Regular/Supplementary Examinations, July - 2023
INDUSTRIAL ENGINEERING AND MANAGEMENT
(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions each Question from each unit
All Questions carry **Equal** Marks

~~~~~  
UNIT-I

- 1 a) Enumerate the differences between industrial engineering and production management. [7M]  
b) Explain about the concept of theory X and theory Y. [7M]

**OR**

- 2 a) Discuss the functions of scientific management and states its merits. [7M]  
b) Define industrial engineering (IE). Discuss the applications of IE. [7M]

UNIT-II

- 3 a) Explain how the preventive maintenance is better than breakdown maintenance. [7M]  
b) Describe the product layout with a neat sketch and state its advantages and limitations. [7M]

**OR**

- 4 a) Explain briefly the basic principles involved in preparing a plant layout of any industrial plant including the important techniques available for this purpose. [7M]  
b) Describe the quantitative techniques for optimal design of layout with example. [7M]

UNIT-III

- 5 a) Why the work content is divided into elements? State the general rules to be followed while breaking the job into elements. [7M]  
b) Explain briefly the concept of work sampling with suitable example. [7M]

**OR**

- 6 a) Sketch the string diagrams and therbligs. [7M]  
b) Explain briefly about the principles of Ergonomics. [7M]

UNIT-IV

- 7 a) Explain the following terms: [7M]  
(i) Quality of performance (ii) Quality control (iii) statistical quality control  
b) Define 'quality of design'. State the factors which control the quality of design. [7M]

**OR**

- 8 The following are the  $\bar{X}$  and  $R$  values of 4 subgroups of readings: [14M]

$$\bar{X} = 10.2, 12.1, 10.8 \text{ and } 10.9$$

$$R = 1.1, 1.3, 0.9 \text{ and } 0.8$$

The specification limits for the components are  $10.7 \pm 0.2$ . Establish the control limits for  $\bar{X}$  and  $R$  charts. Will the product able to meet specifications?

Given:  $A_2 = 0.58$ ,  $D_4 = 2.11$  and  $D_3 = 0.0$



Code No: R2022034

R20

SET - 3

UNIT-V

- 9 a) State and explain supply chain management. Describe how supply chain can be evaluated. [7M]  
b) State and explain job evaluation process and list out its advantages and limitations. [7M]
- OR**
- 10 a) Illustrate clearly about the characteristics of a good wage plan. [7M]  
b) Distinguish between human resource management Vs Personal management. [7M]



**II B. Tech II Semester Regular/Supplementary Examinations, July - 2023**  
**INDUSTRIAL ENGINEERING AND MANAGEMENT**  
(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions each Question from each unit  
All Questions carry **Equal** Marks

~~~~~

UNIT-I

- 1 a) Discuss briefly about the development of industrial engineering. [7M]
b) Explain the qualities an industrial engineer? [7M]

OR

- 2 a) Describe the function of industrial engineer in management science. [7M]
b) Explain the concept of management and describe its functions. [7M]

UNIT-II

- 3 a) Describe the relationship between preventive maintenance and breakdown maintenance. How will you decide the extent of preventive maintenance from the economy point of view? [7M]
b) State the different methods of plant layout. What type of plant layout should be used in cotton mill? Explain. [7M]

OR

- 4 a) Explain the symptoms of a bad plant layout. [7M]
b) State the requirements of good preventive maintenance. [7M]

UNIT-III

- 5 a) Define work study. Describe briefly about its objectives. [7M]
b) Describe the relationship between work measurement and method study. [7M]

OR

- 6 a) Explain the following in connection with time study: [7M]
(i) Selecting the job (ii) Selection of the worker (iii) Breaking the job into elements
b) State and explain in brief the various flow process charts. [7M]

UNIT-IV

- 7 Subgroups of 5 items each are taken from a manufacturing process at a regular interval. A certain quality characteristic is measured and \bar{X} and R values computed. After 25 subgroups it is found that $\sum \bar{X} = 357.50$ and $\sum R = 8.80$. If the specification limits are 14.40 ± 0.40 and if the process is in statistical control, what conclusions can you draw about the ability of the process to produce items within specification? For subgroup of 5 items $d_2 = 2.236$. [14M]

OR

- 8 a) Describe the various elements of TQM in brief. [7M]
b) Differentiate between control charts for attributes and control charts for variables. [7M]

UNIT-V

- 9 a) Explain various phases involved in conducting a value engineering study. State its advantages and limitations. [7M]
b) Explain the concept of merit rating analysis? List out its advantages and disadvantages. [7M]

OR

- 10 a) What is personnel management and explain the functions of personnel management. [7M]
b) State and explain various functions of enterprise resource planning with neat sketch. [7M]