

Code No: R22A0333

**MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY**

(Autonomous Institution – UGC, Govt. of India)

**IV B.Tech I Semester (Honor) Regular Examinations, November 2025****Maintenance and Safety Engineering**

(ME)

<b>Roll No</b>									
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**Time: 3 hours****Max. Marks: 60****Note:** This question paper contains two parts A and B

Part A is compulsory which carries 10 marks and Answer all questions.

Part B Consists of 5 SECTIONS (One SECTION for each UNIT). Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 10 marks.

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**PART-A ( 10 Marks)****(Write all answers of this part at one place)**

			<b>BCLL</b>	<b>CO(s)</b>	<b>Marks</b>
<b>1</b>	A	What is meant by Industrial safety?	<b>L1</b>	<b>CO-I</b>	<b>[1M]</b>
	B	What are the benefits of Industrial safety?	<b>L1</b>	<b>CO-I</b>	<b>[1M]</b>
	C	What is meant by industrial accident?	<b>L1</b>	<b>CO-II</b>	<b>[1M]</b>
	D	What is meant by fire?	<b>L1</b>	<b>CO-II</b>	<b>[1M]</b>
	E	What is safety colour code?	<b>L1</b>	<b>CO-III</b>	<b>[1M]</b>
	F	What is use of safety acts?	<b>L1</b>	<b>CO-III</b>	<b>[1M]</b>
	G	What are the types of maintenance?	<b>L1</b>	<b>CO-IV</b>	<b>[1M]</b>
	H	Objectives of maintenance planning.	<b>L2</b>	<b>CO-IV</b>	<b>[1M]</b>
	I	What are the tools used for maintenance.	<b>L1</b>	<b>CO-V</b>	<b>[1M]</b>
	J	What are the functions of maintenance?	<b>L1</b>	<b>CO-V</b>	<b>[1M]</b>

**PART-B ( 50 Marks)****SECTION-I**

<b>2</b>	A	What are the significances of Industrial safety?	<b>L2</b>	<b>CO-I</b>	<b>[5M]</b>
	B	Explain the malfunctions in traditional safety management?	<b>L3</b>	<b>CO-I</b>	<b>[5M]</b>

OR

<b>3</b>		Explain in detail the Factories act?	<b>L3</b>	<b>CO-I</b>	<b>[10M]</b>
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**SECTION-II**

<b>4</b>		Explain in detail about various types of fire extinguishers	<b>L3</b>	<b>CO-II</b>	<b>[10M]</b>
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OR

<b>5</b>		Explain in detail about fire prevention.	<b>L3</b>	<b>CO-II</b>	<b>[10M]</b>
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**SECTION-III**

<b>6</b>		Discuss about the Indian boilers act-1923?	<b>L4</b>	<b>CO-III</b>	<b>[10M]</b>
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OR

<b>7</b>	A	Highlight the features of employees' state insurance act, 1948	<b>L4</b>	<b>CO-III</b>	<b>[5M]</b>
	B	Discuss the workmen's compensation act, 1923	<b>L4</b>	<b>CO-III</b>	<b>[5M]</b>

**SECTION-IV**

- |          |   |           |              |              |
|----------|---|-----------|--------------|--------------|
| <b>8</b> | Discuss maintenance in equipment life cycle?            | <b>L4</b> | <b>CO-IV</b> | <b>[10M]</b> |
|          | OR  |           |              |              |
| <b>9</b> | List out and explain maintenance engineering objectives | <b>L3</b> | <b>CO-IV</b> | <b>[10M]</b> |

**SECTION-V**

- |           |   |           |             |              |
|-----------|---|-----------|-------------|--------------|
| <b>10</b> | Explain merits of preventive maintenance            | <b>L3</b> | <b>CO-V</b> | <b>[10M]</b> |
|           | OR  |           |             |              |
| <b>11</b> | Explain elements of preventive maintenance program? | <b>L3</b> | <b>CO-V</b> | <b>[10M]</b> |

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<b>Roll No</b>									
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<b><u>PART-A ( 10 Marks)</u></b>			<b>BCLL</b>	<b>CO(s)</b>	<b>Marks</b>
<b><u>(Write all answers of this part at one place)</u></b>					
<b>1</b>	A	Who is known as the father of scientific management?	<b>L1</b>	<b>CO-I</b>	<b>[1M]</b>
	B	What is meant by “social responsibility of management”?	<b>L2</b>	<b>CO-I</b>	<b>[1M]</b>
	C	Define functional organization.	<b>L1</b>	<b>CO-II</b>	<b>[1M]</b>
	D	Mention one advantage of line and staff organization.	<b>L4</b>	<b>CO-II</b>	<b>[1M]</b>
	E	List the types of production systems.	<b>L5</b>	<b>CO-III</b>	<b>[1M]</b>
	F	What does FAST stand for in a FAST diagram?	<b>L4</b>	<b>CO-III</b>	<b>[1M]</b>
	G	What is meant by acceptance sampling?	<b>L2</b>	<b>CO-IV</b>	<b>[1M]</b>
	H	Define defect and defective in SQC.	<b>L1</b>	<b>CO-IV</b>	<b>[1M]</b>
	I	Define PERT.	<b>L3</b>	<b>CO-V</b>	<b>[1M]</b>
	J	What is a critical path in project management?	<b>L4</b>	<b>CO-V</b>	<b>[1M]</b>
<b><u>PART-B ( 50 Marks)</u></b>					
<b><u>SECTION-I</u></b>					
<b>2</b>	A	Explain in detail the functions of management and their interrelationship.	<b>L1</b>	<b>CO-I</b>	<b>[5M]</b>
	B	Critically evaluate Taylor’s scientific management theory- its advantages and limitations.	<b>L2</b>	<b>CO-I</b>	<b>[5M]</b>
<b>OR</b>					
<b>3</b>	A	Explain how the systems approach helps managers in decision-making and problem-solving.	<b>L3</b>	<b>CO-I</b>	<b>[5M]</b>
	B	Discuss how motivation theories contribute to effective management practices	<b>L5</b>	<b>CO-I</b>	<b>[5M]</b>
<b><u>SECTION-II</u></b>					
<b>4</b>	A	What are the benefits of adopting a flat or lean organization structure?	<b>L3</b>	<b>CO-II</b>	<b>[5M]</b>
	B	Describe the matrix organization-its design, merits, demerits, and practical applications.	<b>L3</b>	<b>CO-II</b>	<b>[5M]</b>
<b>OR</b>					
<b>5</b>	A	Compare and contrast the line, functional and line-and-	<b>L2</b>	<b>CO-II</b>	<b>[5M]</b>

- staff organization structures with examples.
- B Analyse the suitability of different organization structures for various types of industries (e.g., manufacturing, IT, service). **L4 CO-II [5M]**

### **SECTION-III**

- 6 A Explain the product design process and discuss its importance in operations management. **L6 CO-III [5M]**
- B Explain the design of product layout and the concept of line balancing using the Ranked positional weight (RPW) method **L2 CO-III [5M]**

OR

- 7 A Discuss the phases of value analysis with an example from a manufacturing process. **L3 CO-III [5M]**
- B Describe the steps involved in selecting a plant location and analyse the factors influencing the decision. **L1 CO-III [5M]**

### **SECTION-IV**

- 8 A Differentiate between variable and attribute control charts. **L4 CO-IV [5M]**
- B Explain in detail the procedure of work study and its importance in productivity improvement **L6 CO-IV [5M]**

OR

- 9 A Discuss the construction and interpretation of  $\bar{X}$ -chart and R-chart for variable data. **L3 CO-IV [5M]**
- B Describe the work measurement process and the calculation of standard time including allowances **L5 CO-IV [5M]**

### **SECTION-V**

- 10 A Write short notes on the point method of job evaluation. **L2 CO-V [5M]**
- B Discuss the concept of project crashing and its impact on project cost and duration with suitable example. **L3 CO-V [5M]**

OR

- 11 A Discuss in detail the methods of job evaluation and identify their suitability for different organizations. **L5 CO-V [5M]**
- B Develop a network diagram for the project specified below: **L6 CO-V [5M]**

Activity	A	B	C, D	E	F	G
Immediate predecessor activity	-	A	B	C	D	E, F

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