

Code No: R17A0339

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

R17

(Autonomous Institution – UGC, Govt. of India)

IV B.Tech - II Semester Supplementary Examinations, April 2023

Renewable Energy Sources

(ME)

Roll No										
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Time: 3 hours

Max. Marks: 70

Note: This question paper Consists of 5 Sections. Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

SECTION-I

1 What is Solarimeter. Discuss about the solar radiation data of India [14M]

OR

2 Derive an expression for total radiation on inclined surface [14M]

SECTION-II

3 Explain flat plate collector with neat sketch? [14M]

OR

4 Describe the principle and working of solar photovoltaic energy conversion? [14M]

SECTION-III

5 With the help of a neat sketch, explain about continuous and batch type biogas plant [14M]

OR

6 How do you classify windmills, explain any one type with neat sketches [14M]

SECTION-IV

7 Explain various methods to extract geothermal energy [14M]

OR

8 Explain the various methods of harnessing the energy [14M]

SECTION-V

9 Explain the principle and working of MHD accelerator [14M]

OR

10 Explain principle and operation of Hydrocarbon fuel cell [14M]

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IV B.Tech - II Semester Supplementary Examinations, April 2023

Maintenance and Safety Engineering

(ME)

Roll No										
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Time: 3 hours

Max. Marks: 70

Note: This question paper Consists of 5 Sections. Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

SECTION-I

1 Explain important provisions of Indian Factories Act with regard to safety? [14M]

OR

2 Explain the Safety committees and structure [14M]

SECTION-II

3 a) What accident reporting? Explain how it helps in preventing accidents. [7M]

b) Explain the education and training in safety. [7M]

OR

4 a) Explain the role of house keeping department. [7M]

b) What is the role of firefighting equipment's? Explain. [7M]

SECTION-III

5 a) What are the main objectives of Factories Act. Explain [7M]

b) Discuss introduction of Explosive Act. [7M]

OR

6 Explain the Code and regulations for worker safety and health. [14M]

SECTION-IV

7 a) What is the maintenance? Explain different problems in maintenance [7M]

b) Explain maintenance organization objectives and responsibility. [7M]

OR

8 a) What are the different guidelines for developing and assessing the effectiveness of the training program? Explain [7M]

b) Explain maintenance costs [7M]

SECTION-V

9 a) What is Breakdown maintenance? Explain. [7M]

b) Explain the fault tree analysis [7M]

OR

10 What is fault tree analysis? Apply it for a car accident and suggest detail analysis [14M]

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

R17

(Autonomous Institution – UGC, Govt. of India)

IV B.Tech- II Semester Advance Supplementary Examinations, July 2022

Renewable Energy Sources

(ME)

Roll No									
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Time: 3 hours

Max. Marks: 70

Answer Any Five Questions

All Questions carries equal marks.

- 1 a) What are the reasons for variation in solar radiation reaching the earth and that received outside the earth atmosphere? [7M]
- 1 b) Explain the working of Pyrheliometer with the help of neat sketch. [7M]
- 2 a) Give an over view of conventional and non-conventional sources of energy sources with reference to India. [7M]
- 2 b) How do you calculate solar radiation on tilted surfaces? [7M]
- 3 a) Derive the equation for solar energy balance equation and collector efficiency their advantages and limitations. [7M]
- 3 b) Enumerate different types of concentrating collectors and also list out advantages and limitations. [7M]
- 4 a) Explain with constructional features of solar flat plate collector for efficient conversion. [7M]
- 4 b) What is the need for inclination of flat plate collectors, while concentrators are fixed horizontally? [7M]
- 5 a) Discuss the energy potential from wind in the context of India. Where can wind turbines be installed? [7M]
- 5 b) What are the various components of a horizontal axis wind turbine explain? [7M]
- 6 a) Discuss with sketch the working of a fixed dome biogas plant. [7M]
- 6 b) What are the advantages of biomass conversion into biogas? Discuss. [7M]
- 7 a) Explain in detail about different types of conversion techniques for tidal energy. [7M]
- 7 b) Explain about the economic aspects of mini hydel power plant. [7M]
- 8 a) Explain about the applications of thermo- electric generators. [7M]
- 8 b) Explain about the thermodynamic aspects of fuel cells. [7M]

Code No: **R17A0337****MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY**
(Autonomous Institution – UGC, Govt. of India)**IV B.Tech- II Semester Advance Supplementary Examinations, July 2022**
Maintenance and Safety Engineering
(ME)

Roll No										
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Time: 3 hours**Max. Marks: 70**Answer Any **Five** Questions
All Questions carries equal marks.

- 1 a) What strategies are adopted in maintenance procedures in 21st century and explain its impact on the performance? [7M]
How the maintenance management control indices are developed and explain their utilities? [7M]
- 2 What are the functions of maintenance department and explain its organization structure? [14M]
- 3 a) What are the various elements of preventive maintenance and explain the characteristics? [7M]
b) What are the methods to be adopted in the evaluation of preventive maintenance program? [7M]
- 4 Write the types of personal protective equipments. Explain in detail about PPE'S and their applications. [14M]
- 5 a) Assume that a machine is scheduled to operate for 4000 h annually. The machine mean time between failures and mean time to repair are 800 h and 20 h, respectively. Calculate the annual labor cost of corrective maintenance if the labor cost is Rs.500 per hour. [7M]
b) Explain any two indices related to maintenance costing. [7M]
- 6 a) What are the various factors and reasons which influence the maintenance cost? [7M]
b) How to prepare the budget for the maintenance department to cover overall expenditure of the department? [7M]
- 7 a) Explain the following RCM Program Components Effectiveness Measurement Indicators: Emergency percentage index, PTI covered equipment index, PM/PTI – Reactive maintenance index. [7M]
b) Explain the Bathtub Hazard Rate Concept. [7M]
- 8 a) Differentiate between reliability and maintainability. [7M]
b) Describe the maintainability management of the machine life cycle. [7M]

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

R17

(Autonomous Institution – UGC, Govt. of India)

IV B.Tech- II Semester Supplementary Examinations, May 2022

Renewable Energy Sources

(ME)

Roll No									
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Time: 3 hours

Max. Marks: 70

Note: This question paper Consists of 5 Sections. Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

SECTION-I

- 1 a) Explain about different parameters that describe the amount of solar energy reaching the Earth's surface. [7M]
b) With the help of a neat diagram, explain about Pyranometer. [7M]

OR

- 2 Explain the potential of renewable energy sources in India. [14M]

SECTION-II

- 3 a) Illustrate Solar Energy System with neat diagram. [7M]
b) Explain any one type of collector in Solar Energy Systems. [7M]

OR

- 4 With the help of schematic diagram explain the application of solar energy in distillation and drying. [14M]

SECTION-III

- 5 a) Describe the salient features of a vertical - axis wind turbine with the help of a diagram. [7M]
b) Explain about various forces acting on the blade of a wind turbine. [7M]

OR

- 6 a) With the help of a neat diagram, explain the construction and working of floating drum type bio - gas plant. [10M]
b) Explain about IC engine operation using bio – gas. [4M]

SECTION-IV

- 7 a) With line diagram, explain the heat extraction from hot dry rocks. [7M]
b) What are the possible sources of geothermal pollution? How to avoid them? [7M]

OR

- 8 Explain the hybrid cycle operation of OTEC plant with a neat diagram. [14M]

SECTION-V

- 9 a) What is need for Direct Energy Conversion? [7M]
b) Explain the basic principles of a magneto hydrodynamic power (MHD) conversion system. [7M]

OR

- 10 a) Explain the heating and cooling applications of a thermoelectric system comment on the materials used for low and high temperature applications [7M]
b) Comment on relative performance of fuel cells. [7M]

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Maintenance and Safety Engineering

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Time: 3 hours

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Note: This question paper Consists of 5 Sections. Answer FIVE Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

SECTION-I

- 1 a) What shall be the key features of engineering maintenance in the 21st century? Discuss. [7M]
b) Define and explain two indices that can be used to evaluate the overall performance of a maintenance organization. [7M]
- OR
- 2 What is the role of Management and Government in Industrial safety. Explain [14M]

SECTION-II

- 3 a) What are the various elements of preventive maintenance and explain the characteristics? [7M]
b) What are the methods to be adopted in the evaluation of preventive maintenance program? [7M]
- OR
- 4 a) What are the effects of overhaul, rebuild and servicing in the corrective maintenance? [7M]
b) A maintenance department annually holding cost is per unit is Rs50/- along with set up cost or ordering cost is Rs250/- per order. Determine: i) Optimal number of units per order ii) Expected time between orders. [7M]

SECTION-III

- 5 a) What are the various sequence of operations involved to obtain good quality maintenance work? [7M]
b) What are the various areas to be concentrated by the equipment manufactures to improve maintenance safety? [7M]
- OR
- 6 a) List out the types of PPE'S. [4M]
b) Explain in details about PPE'S and write their applications [10M]

SECTION-IV

- 7 a) What is reactive maintenance, as applied to reliability centered maintenance? [7M]
b) Differentiate between preventive maintenance and pro- active maintenance. [7M]
- OR
- 8 a) How to determine periodicity of monitoring in the preventive maintenance? [7M]
b) What are the various condition monitoring techniques employed in the reliability centered maintenance? [7M]

SECTION-V

- 9 a) Discuss the common errors related to maintainability design. [7M]
 b) List the primary goals of standardization [7M]

OR

- 10 a) What is meant by interchange ability of components and explain its importance on maintainability? [7M]
 b) What are the specific considerations in the maintainability design characteristics? [7M]
