

Code No: R22D2110

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

M.Tech I Year II Semester Supplementary Examinations, January 2024**Thermal and Nuclear Power Plants**

(TE)

Roll No									
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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.

PART-A (10 Marks)**Marks**

- | | | | |
|---|---|--|------|
| 1 | A | How are chemical fuel classified? | [1M] |
| | B | What are the sources of energy? | [1M] |
| | C | List out the major fields of application of gas turbine. | [1M] |
| | D | Define the term compression efficiency. | [1M] |
| | E | Explain the term Isobars. | [1M] |
| | F | What is mean by the term Radioactivity? | [1M] |
| | G | Define the term Demand factor. | [1M] |
| | H | Name different types of loads used in power generation. | [1M] |
| | I | Enumerate some power plant pollutants of major concern. | [1M] |
| | J | List out various temperature measuring devices used in power plants. | [1M] |

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

- | | | | |
|---|---|--|------|
| 2 | A | How is steam power plants classified? | [5M] |
| | B | What are the essential requirements of steam power plant station design? | [5M] |

OR

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|---|---|---|------|
| 3 | A | Enumerate and explain various modern ash-handling systems. | [5M] |
| | B | Give the general layout of ash handling and dust collection system. | [5M] |

SECTION-II

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|---|---|--|------|
| 4 | A | With the help of a block-diagram explain the working principles of a closed cycle gas turbine plant. | [5M] |
| | B | Describe methods of improving output and performance of gas turbine plant. | [5M] |

OR

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|---|---|---|------|
| 5 | A | What are the different components of a gas turbine plant? Explain them. | [5M] |
| | B | State the advantages of gas turbine power plant. | [5M] |

SECTION-III

- | | | | |
|---|---|---|------|
| 6 | A | Distinguish between “Artificial radioactivity” and “Natural radioactivity”. | [5M] |
| | B | What are the advantages and limitations of nuclear power plant? | [5M] |

OR

- 7 Explain with help of diagram the construction and working of a nuclear power plant. [10M]

SECTION-IV

- 8 A Define “connected load, “maximum load” and “load factor”. Explain its importance in total power system. [5M]
B What are the different methods of regulating voltage in a power supply system? [5M]

OR

- 9 A Enumerate and explain the operating characteristics of power plant. [5M]
B List and explain various costs which go to form the total cost of a power system. [5M]

SECTION-V

- 10 A Enumerate and explain various types of temperature measuring devices used in power plants. [5M]
B Write a short note on “Flow meters”. [5M]

OR

- 11 A How are emissions from thermal power plants classified? [5M]
B Discuss briefly various methods of reducing the thermal pollution. [5M]

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MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

M.Tech I Year II Semester Supplementary Examinations, January 2024**Energy Management**

(TE)

Roll No									
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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.

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

- | | | | |
|---|---|--|------|
| 1 | A | Write any two objectives of energy management. | [1M] |
| | B | Mention any two skills an energy management team should possess in implementing energy management. | [1M] |
| | C | What are the different techniques to perform energy audits? | [1M] |
| | D | List different types of energy audits. | [1M] |
| | E | Differentiate between micro-economics and macro-economics. | [1M] |
| | F | What is meant by Risk analysis? | [1M] |
| | G | How do you calculate payback period? | [1M] |
| | H | Write any two dis-advantages of the common method of analysis. | [1M] |
| | I | List any two dis-advantages of solar energy. | [1M] |
| | J | Write any two important characteristics of wind. | [1M] |

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

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|----|---|---|------|
| 2 | A | Explain the various principle of energy management. | [5M] |
| | B | Discuss the role of energy manager in manufacturing industry. | [5M] |
| OR | | | |
| 3 | A | Explain the necessary steps in organizing an energy management program in a multi-national company. | [5M] |
| | B | Explain the scope for energy management in industries. | [5M] |

SECTION-II

- | | | | |
|----|---|---|------|
| 4 | A | List out the resources for plant energy studies. | [5M] |
| | B | Explain the design process steps for energy conservation. | [5M] |
| OR | | | |
| 5 | A | Discuss the energy conservation opportunities in cooling and heating systems used in industrial sector. | [5M] |
| | B | Explain about the formulation process of objectives and constraints of an energy flow system. | [5M] |

SECTION-III

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|---|---|--|------|
| 6 | A | Discuss the scope and methodology of economics. | [5M] |
| | B | Explain in detail about any two types of depreciation. | [5M] |

OR

- 7 A Explain in-detail about the two techniques for adjusting time value of money. [5M]
B Explain the steps involved in preparation of budget. [5M]

SECTION-IV

- 8 A What is meant by present worth? Explain with suitable example. [5M]
B Calculate the average rate of return of a project whose details are given below. [5M]

Year	Investment value	Profit after tax
1	80000	18000
2	90000	22000
3	65000	24000
4	60000	28000
5	55000	30000
6	50000	32000

OR

- 9 A Discuss the internal rate of return with a suitable example. [5M]
B List out the advantages and disadvantages of Payback and Investor's rate of return methods. [5M]

SECTION-V

- 10 A Discuss about the different technologies to harness solar energy. [5M]
B Explain about thermal energy storage process in heating and cooling applications. [5M]

OR

- 11 A Explain the different configurations of wind turbines. [5M]
B Discuss about performance characteristics of a steam turbine [5M]
