Code No: R20DME51

R20

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOL

(Autonomous Institution – UGC, Govt. of India)

M.Tech II Year I Semester Regular Examinations, April 2022

Non-Conventional Energy Sources

(TE, VLSI&ES & ASP)

Roll No										

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.

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SECTION-I

1 What is principle collection of solar energy used in a non conventional solar pond? Describe a non convective solar pond for solar energy collection and storage. **[14M]**

OR

2 Explain with a neat sketch the working principle of solar photovoltaic system and its advantages. **[14M]**

SECTION-II

3 Explain various types of geothermal resources **[14M]**

OR

4 What is geothermal energy? How can geothermal energy be utilozed for electric power generation? **[14M]**

SECTION-III

5 Differentiate P-P cycle, Carbon cycle and Deuterium cycle **[14M]**

OR

6 Describe Magneto Hydro Dynamic open cycle system. What are the main advantages of Magneto Hydro Dynamic power generation. **[14M]**

SECTION-IV

7 Explain briefly organic materials used in bio mass plant. **[14M]**

OR

8 Explain the techniques suggested for maintaining the bio gas production. **[14M]**

SECTION-V

9 Define the following related to wind energy: (i) Interference factor. (ii) Power coefficient, (iii) Torque coefficient (iv) Thrust coefficient, **[14M]**

OR

10 Describe the working of different types of Ocean Thermal Energy Conversion power plants. **[14M]**

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Code No: R20D2116

R20

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOL

(Autonomous Institution – UGC, Govt. of India)

M.Tech II Year I Semester Regular Examinations, April 2022

Fuels & Combustion

(TE)

Roll No										

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.

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SECTION-I

1	a) Explain about Conventional and Unconventional Solid fuels.	**[7M]**
	b) Discuss in detail about gaseous fuels?	**[7M]**
	OR	
2	a) Write short notes on liquification and gasification of solid fuels.	**[7M]**
	b) Explain the process of carbonization of coal.	**[7M]**

SECTION-II

3	What is chain reaction? Explain about initiation, propagation and termination processes.	**[14M]**
	OR	
4	Explain Hydrogen-Oxygen combustion system and explosion limits at 550°C.	**[14M]**

SECTION-III

5	A natural gas is composed of 82% methane and 18% ethane by volume. Determine the maximum adiabatic flame temperature for constant pressure burning at 1 atm. With the reactants and air entering at 25°C and 30% excess air.	**[14M]**
	OR	
6	Explain flame stability and adiabatic flame temperature.	**[14M]**

SECTION-IV

7	Distinguish between laminar and turbulent flames. Draw neat sketches to illustrate them. What are the different fields of application of the turbulent flame?	**[14M]**
	OR	
8	a)Draw the characteristics stability diagram for the open burner flames and discuss the limits of flash back, blow- off or blow out.	**[7M]**
	b) Briefly describe the mode of combustion of fuel droplets in sprays	**[7M]**

SECTION-V

9	What are the probable pollutants generating from combustion systems and suggest any one popular controlling technique for each of them with brief explanation.	**[14M]**
	OR	
10	a)How does particulates form in combustion system? What are the methods used to reduce particulate emission from combustion system?	**[7M]**
	b)what are the methods available for NO_x emission control? Discuss them briefly.	**[7M]**

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