

31N1005

Roll No. _____

Total No. of Pages: 2

31N1005
B. Tech. III - Sem. (Main) Exam., May – 2023
Mechanical Engineering
3ME4-05 Renewable Energy Systems

Time: 3 Hours

Maximum Marks: 70

Instructions to Candidates:

Part – A: Short answer questions (up to 25 words) 10×2 marks = 20 marks.
All ten questions are compulsory.

Part – B: Analytical/Problem solving questions 5×4 marks = 20 marks.
Candidates have to answer five questions out of seven.

Part – C: Descriptive/Analytical/Problem Solving questions 3×10 marks = 30 marks. Candidates have to answer three questions out of five.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting materials is permitted during examination.
(Mentioned in form No. 205)

1. NIL

2. NIL

PART – A

Q.1 What do you understand by energy resources?

Q.2 Define tip speed ratio.

Q.3 What are the limitations of renewable energy sources?

Q.4 What is the condition for maximum output power from a wind turbine?

Q.5 Differentiate between beam and diffuse radiation.

- Q.5 What is the principle of solar photovoltaic?
- Q.7 What are the different forms of biomass available as biofuels?
- Q.8 Explain the production of produces gas from biomass.
- Q.9 Write a short note on bio-gasifier.
- Q.10 Mention the applications of wind energy.

PART – B

- Q.1 Give brief review of various sources of renewable energy.
- Q.2 Describe the working of a wind power system with a neat schematic diagram.
- Q.3 Draw and explain the operation of plate collectors.
- Q.4 Discuss the Indian energy scenario.
- Q.5 Give the advantages and disadvantages of Geothermal energy.
- Q.6 Explain the components of a tidal power plants.
- Q.7 Mention the prospects of tidal energy in India.

PART – C

- Q.1 With the help of neat sketch, explain the working of floating drum type biogas plant.
- Q.2 Explain the operation and control of wind energy conversion system.
- Q.3 Explain any two application of Solar PV systems with block diagram.
- Q.4 Explain the binary fluid geothermal power plant and geothermal preheat hybrid power plant.
- Q.5 Explain the variable speed, variable frequency scheme of electric generation from wind system.

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