

R17

Code No: 5402AZ

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

M. Tech I Semester Examinations, June/July – 2019

RENEWABLE ENERGY SYSTEMS

(Common to CAD/CAM, DSCE, EE, MD, SE, TE, AMS, DECS, DFM, ES, VLSI System Design, CSE, VLSI and ES, ES and VLSI Design, HE, HVAC, ED)

Time: 3hrs

Max.Marks:75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

5 × 5 Marks = 25

- 1.a) What is Beam and Diffuse radiation? Explain. [5]
- b) Write short note on Material for MHD generator. [5]
- c) What are the potential sites for tidal energy in India? [5]
- d) What are the advantages of an IGCC generating plant? [5]
- e) Describe the classifications of fuel cells. [5]

PART-B

5 × 10 Marks = 50

- 2.a) Enumerate the different types of concentrating type collectors. Describe a collector used in power plant for generation of electrical energy.
- b) What are direct and indirect gap material? Explain depletion region and barrier voltage. [5+5]

OR

- 3.a) What are the main applications of solar pond? Describe briefly.
- b) What is the principle of solar photovoltaic power generation? What are the main elements of a PV system? [5+5]
- 4.a) Describe an MHD closed cycle system, with its advantages and disadvantages.
- b) Describe the main applications of wind energy, giving neat sketches. [5+5]

OR

- 5.a) What are important factors to be considered while selecting for an MH generator.
- b) How are WEC system classified? Discuss brief. [5+5]
- 6.a) Explain with sketches the various methods of tidal power generation. What are the limitations of each method?
- b) What are the advantages and limitations of wave energy conversion? [5+5]

OR

- 7.a) What are the difficulties in tidal power developments?
- b) What are the main types of OTEC power plants? Describe their working in brief. [5+5]

8.a) What is meant by anaerobic digestion? What are the factors, which affect bio digestion? Explain briefly.

b) Explain the waste heat utilization and its various applications. [5+5]

OR

9.a) What are the advantages of phase change energy storage.

b) Comment on the rural electrification plans of the government of India. [5+5]

10.a) What are the different arrangements of a storage battery, describe briefly.

b) What is a fuel cell? Describe the principle of working of fuel cell with reference to H_2-O_2 cell. [5+5]

OR

11.a) Describe various fuels used in fuel cells along with chemical reaction involved.

b) What are the main obstacles in the way of widespread use of fuel cells? [5+5]

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