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Eighth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Renewable Energy Sources

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting at least TWO questions from each part.

PART – A

- 1 a. What are the conclusions on alternate energy strategies? (06 Marks)
 b. Discuss briefly the prospects of non-conventional energy sources in India. (06 Marks)
 c. What are Primary and Secondary energy sources? Mention the advantages of renewable energy sources. (08 Marks)
- 2 a. Define : (i) Direct radiation (ii) Diffuse radiation (iii) Solar constant (iv) Zenith angle (v) Altitude angle. (05 Marks)
 b. Calculate the angle made by beam radiation with the normal to a flat collector on December 1, at 9.00am, solar time for a location at 28°35' N. The collector is tilted at an angle of latitude plus 10°, with horizontal and is pointing due south. (07 Marks)
 c. Classify the instrument used for measurement of solar radiation and discuss in brief. (08 Marks)
- 3 a. With a neat sketch, explain the principle of conversion of solar energy into heat. (06 Marks)
 b. List out the advantages and disadvantages of concentrating collectors over a flat-plate collector. (08 Marks)
 c. Why orientation is needed in concentrating type collectors? Describe the different methods of sun tracking. (06 Marks)
- 4 a. What are the different approaches of thermal electric conversion system from solar energy? Discuss in detail with a neat sketch any one of them. (10 Marks)
 b. What is the principle of solar photovoltaic power generation? What are the main elements of a PV system? Mention the advantages and limitation of photo voltaic solar energy conversion. (10 Marks)

PART – B

- 5 a. List out the main considerations in selecting a site for wind generations. (06 Marks)
 b. Describe with a neat sketch the working of a wind – energy conversion system with main components. (08 Marks)
 c. Derive the expression for power available in the wind. (06 Marks)
- 6 a. Briefly discuss any six factors affecting biodigestion. (06 Marks)
 b. With a neat diagram, explain Janta Biogas plant. (06 Marks)
 c. Discuss the possible energy conversion routes and products from biomass. (08 Marks)
- 7 a. Distinguish: i) Single basin arrangement ii) Double basin arrangement. For generation of electricity from water power with relevant sketches. (10 Marks)
 b. What are the main types of OTEC power plants? Describe their working in brief. (10 Marks)
- 8 Write short notes on :
 a) Fuel cell b) Small Hydro Resources c) Hydrogen Energy d) Wave energy. (20 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any revealing of identification, appeal to evaluator and/or equations written eg. 42+8 = 50, will be treated as malpractice.