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10EE836

Eighth Semester B.E. Degree Examination, July/August 2022
Renewable Energy Sources

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. Compare the conventional and non-conventional sources of energy, based on different aspects. **(08 Marks)**

b. Substantiate the statement "Energy consumption is a measure of prosperity". **(04 Marks)**

c. Calculate the angle made by the beam radiation with the normal to a flat-plate collector tilted by 30° from the horizontal , pointing due south located in New Delhi at 11:00 Hr (IST) on 1st June. The latitude and longitude of New Delhi are 28°35′N and 77°12′E respectively. The standard IST longitude is 81°44′ E. **(08 Marks)**

2 a. Explain why solar radiation reaching the surface of the earth is in an attenuated form. **(05 Marks)**

b. With relevant figures, explain the construction and working of a flat plate collector used for heating the water. **(10 Marks)**

c. What is a solar greenhouse? Explain how internal environment of such a greenhouse is regulated. **(05 Marks)**

3 a. With a neat figure explain the working of a solar pond electric power plant. **(10 Marks)**

b. Write a note on concentrating collector. **(06 Marks)**

c. Mention the major advantages and disadvantages of a solar PV System over conventional power system. **(04 Marks)**

4 a. Explain the principle of working of a photovoltaic cell (solar all) **(08 Marks)**

b. With reference to solar PV system distinguish between cell, module, panel and array. **(07 Marks)**

c. Explain the thermal energy storage through the method of sensible heat storage. **(05 Marks)**

PART – B

5 a. Show that maximum power that can be extracted from the wind by a wind turbine is 0.593 times the power in the wind. **(10 Marks)**

b. Discuss the factors that must be considered while selecting the site for WECs. **(10 Marks)**

6 a. Explain the various stages in biogas production from waste biomass. **(06 Marks)**

b. Mention the advantages and disadvantages of biomass energy. **(06 Marks)**

c. With a neat figure explain the fixed dome type biogas plant. **(08 Marks)**

7 a. Explain the operation of a double basin tidal power plant. **(06 Marks)**

b. With a schematic diagram explain the working of a closed cycle OTEC system. **(10 Marks)**

c. What are the advantages and limitations of tidal power generation? **(04 Marks)**

8 a. Explain the working of a fuel-cell and mention the importance advantages. **(10 Marks)**

b. Writing the layout diagram, explain a micro-hydro-electric scheme. **(10 Marks)**

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