Total No. of Questions :8] *[Total No. of Printed Pages :2*

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MMTP-302(B)

M.E./M.Tech., III Semester

Examination, June 2017

Non Conventional Energy Sources

(Elective-II)

Time : Three Hours

Maximum Marks: 70

Note: i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) Define the primary and secondary energy sources. Write the different routes of primary energy into electrical energy.
   b) What are the typical parameters that determine a sustainable environment? Discuss how the eco system is responsible for creating various types of energy resources.

2. a) Write the line diagram for
      i) Solar thermal engine and
      ii) Solar pump
   b) What is the principle of photovoltaic power conversion? Outline one power generation plant that is in operation in the world.

3. a) Give a sketch of a 'gobar gas' production plant and explain its functioning.
   b) How is landfill gas obtained? What is its composition? How is this gas used?

4. a) What are the ways of disposal of nuclear wastes fuel?
   b) Differentiate the fission and fusion technologies.

5. a) What is geothermal energy? How it is identified? What can be the potential of this source?
   b) Discuss the flash cycle and binary cycle types of extracting the geothermal energy.

6. a) Discuss the Monod equation for the growth of microorganism.
   b) What is Michaelis-Menten equation? Explain how Michaelis-Menten equation can be derived for enzymatic kinetics from first principles.

7. a) Discuss the potential of installing wind power station in Indian states.
   b) What are the causes of tides? Discuss the route of converting the tidal energy in to useful form.

8. Write short note on:

   a) Fuel cell
   b) Types of wind mills
   c) Depletion of conventional energy sources

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