

**7E7044**

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**7E7044****B.Tech. VII Semester (Main) Examination Dec. - 2015****Electrical & Electronics Engg.****7EX4A Non conventional Energy Sources****Common with EE****Time : 3 Hours****Maximum Marks : 80****Min. Passing Marks : 24****Instructions to Candidates:**

Attempt any **five** questions, selecting one question from **each unit**. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.)

**Unit - I**

1. a) On the basis of environment and economic aspects, justify the potential and use of non- conventional energy sources in power generation in Indian context. (8)
- b) Explain the environmental impact of Tidal power plant. (8)

**OR**

1. a) Briefly explain the different constraints in the use of renewable energy sources. (8)
- b) What are the reasons of tide and how it can be used for power production? Draw the layout of a tidal power plant and name its various components. (8)

**Unit - II**

2. a) How solar radiation on tilted surface can be calculated? Discuss mathematical used for the same. (8)
- b) Describe with neat sketch the working of solar water heating system. (8)

**OR**

2. a) Explain the following terms related to solar radiation geometry. Declination, Hour angle, Altitude angle, Zenith angle, Surface azimuth angle, Solar azimuth angle, slope, Incident angle, Day length and local apparent time.  $(1 \times 10 = 10)$
- b) What are the principle of solar photovoltaic power generation? What are the main elements of PV system?  $(6)$

**Unit - III**

3. a) Describe with neat sketch working of a preheat hybrid geothermal power plant. What are its merit and demerits?  $(8)$
- b) What is maximum efficiency of conversion of wind machine? Discuss its principle of conversion.  $(8)$

**OR**

3. a) Explain the advantages and disadvantages of geothermal energy over other energy sources.  $(8)$
- b) Explain the factors on which the wind current depends. How wind blows in coastal areas? How the wind power is calculated?  $(8)$

**Unit - IV**

4. a) Briefly explain the different methods of plasma confinement.  $(8)$
- b) What are the different requirements for nuclear fission and nuclear fusion?  $(8)$

**OR**

4. a) Describe with neat sketch the working of laser fusion reactor.  $(6)$
- b) Explain the following term in detail. Magnetic heating pellet fusion reactor, plasma heating fusion hybrid and beam fusion.  $(2 \times 5 = 10)$

**Unit - V**

5. a) Explain the process of ethanol production from Cassava. What are the uses of ethanol in power sector?  $(8)$
- b) How biogas can be produced. Discuss its application and mechanism involved for generation.  $(8)$

OR

5. a) What do you mean by pyrolysis? Discuss working of one of the most efficient pyrolysis unit. (8)
- b) What are the different factors considered for selection of biogas plant site? (8)