

Printed Pages : 02

MME-272

(Following Paper ID and Roll No. to be filled in your Answer Books)

PAPER ID : MF13

Roll No.

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M. TECH. (Sem.II)

THEORY EXAMINATION 2015-16
RENEWABLE ENERGY SYSTEMS

Time : 3 Hours

Total Marks : 100

Note: Attempt any five questions. All questions carry equal marks

1. (a) How is per capita energy consumption related with standard of living or development of a country? Comment on the Oil crisis 1973 and growth of energy sector in India.
- (b) Classify the nonconventional energy resources discuss them briefly. What are the advantages and limitations of renewable energy sources? Briefly discuss the environmental impacts of conventional energy usage.
2. (a) Explain the depletion process of solar radiation as it passes through the atmosphere to reach the surface of the earth. Why orientation is needed in concentrating type collector. Describe the different system of sun tracking.
- (b) Classify the method of solar energy storage. Describe thermal energy storage system.

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3. (a) What is the principle of solar photovoltaic power generation? What are the main elements of PV System?
- (b) Describe the layout and working of continuous solar cooling system.
4. (a) (i) What is the source of tidal energy? What are the main hurdles in the development of tidal energy?
- (ii) The basin area of a tidal power plant is $20 \times 10^6 \text{ m}^2$. The tidal range is 8 m. Calculate the energy generated in kwh.
- (b) Write a short note on small head hydropower development. What type of turbine is best suited for micro hydel plant? Describe it.
5. (a) Explain the process of commercial production of ethanol from biomass. Explain the desirable feature of bio-ethanol that makes it suitable as automobile fuel.
- (b) Explain the process of production of biogas from biomass. What are the main advantages of anaerobic digestion of biomass?
6. (a) What is the basic principle of wind energy conversion? Derive the expression for power developed due to wind
- (b) Discuss the main factors affecting the choice of selecting a site of wind generators. Describe with neat sketch the working of a horizontal axis wind turbine.
7. (a) Write a note on integrated energy systems and their economics
- (b) Describe construction and working of the floating drum and fixed dome type biogas plant with neat sketch.

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