

**M. TECH**  
**(SEM I) THEORY EXAMINATION 2018-19**  
**RENEWABLE ENERGY SYSTEM**

Time: 3 Hours

Total Marks: 70

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

## SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14
- Explain the uses of wind energy.
  - What is the law of energy conservation?
  - Discuss renewable and non-renewable energy resource3s.
  - Define OTEC.
  - Explain latitude angle.
  - What is biogas?
  - Explain the term thermionic emission.

## SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21
- What are the reasons for variation in solar radiations reaching the earth than receive at the outside of the atmosphere?
  - Describe the main consideration in selecting in a site for wind generator.
  - What is the difference between biomass and biogas? Explain in detail.
  - Describe the different schemes for wind electric generation. Also describe the generator control scheme.
  - What is the basic principle of OTEC?

## SECTION C

3. Attempt any *one* part of the following: 7 x 1 = 7
- What are the factors, which affect the size of biogas plants?
  - What is meant by wet fermentation and dry fermentation?
4. Attempt any *one* part of the following: 7 x 1 = 7
- Explain with sketches the various methods of tidal power generation. What are the limitations of each method?
  - What is biodiesel? How is biodiesel manufactured?
5. Attempt any *one* part of the following: 7 x 1 = 7
- What is fuel cell? Describe the principle of working of fuel cell with reference to H<sub>2</sub>-O<sub>2</sub> Cell.
  - Give salient features of Bombay High and Assam Crudes and also explain what products can be derived from these crudes.
6. Attempt any *one* part of the following: 7 x 1 = 7
- Describe the closed cycle OTC system, with its advantages over open cycle system.
  - What is SNG? How is SNG manufactured from coal? Explain in detail.
7. Attempt any *one* part of the following: 7 x 1 = 7
- What is coal carbonization? Differentiate between low-temperature and high temperature carbonization.
  - Write detail note on;
    - MHD systems
    - Cogeneration of fuel and power