Roll No. | | | | | | | | | | | | |

Total No. of Pages : 02

Total No. of Questions : 18

B.Tech. (Electrical & Electronics) (2012 Batch) (Sem.–7)

# NON-CONVENTIONAL ENERGY SOURCES

Subject Code : BTEE-803

M.Code : 71932

Time : 3 Hrs. Max. Marks : 60

**INSTRUCTIONS TO CANDIDATES :**

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

## SECTION-A

**Answer briefly :**

1. List the applications of solar energy.
2. Explain the term conversion effectiveness.
3. Discuss in brief the economic aspects of thermoelectric generators.
4. Discuss the principle of operation of geothermal system.
5. Why thermocouples are connected in series? Explain.
6. What is Photovoltaic effect? Discuss.
7. What do you mean by regenerative fuel cell? Discuss.
8. Explain the term active polarization *w.r.t.* fuel cells.
9. What do you mean by Peltier effect? Explain.
10. Write down the advantages and limitations of wind power energy.

## SECTION-B

11. Discuss the limitations of conventional energy. Explain the need of alternate energy sources.

12. With the following specifications for MHD generator, calculate :

    a) Open circuit voltage

    b) Maximum power output.

    Plant area = $0.1m^2$; Distance between plates = 0.5m; Flux density = $3Wb/m^2$; Average gas velocity = $10^3$m/s; Gaseous conductivity = 10 mho/m.

13. Discuss the principle of operation of a fuel cell with reference to $H_2$–$O_2$ cell.

14. List the advantages of solar energy. Discuss in detail the scenario of solar energy in India.

15. What do you mean by tidal energy? Discuss the various aspects of tidal energy.

## SECTION-C

16. Explain the Seeback and Thomson effects. Also describe the thermoelectric power generator.

17. Discuss :

    a) Advantages, disadvantages and applications of fuel cells.

    b) Various aspects of Practical MHD generator.

18. Explain the following :

    a) Basic scheme and applications of direct energy conservation.

    b) Biomass energy system.



**NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.**