

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

**B.Tech.(EE) (2011 Onwards)/
(Electrical & Electronics) (2011 & 2012 Batch) (Sem.-7,8)**

NON-CONVENTIONAL ENERGY SOURCES

Subject Code : BTEE-803

Paper ID : [A3034]

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION 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

Q1 Answer briefly :

- (a) What are primary and secondary energy sources?
- (b) What are the limitations of renewable energy sources?
- (c) Discuss the principle of MHD generation.
- (d) What is Seeback effect?
- (e) How Seeback coefficients vary with temperature?
- (f) Define Peltier effect.
- (g) Discuss the characteristics of photovoltaic cell.
- (h) Define solar constant.
- (i) Discuss the principle of action of fuel cell.
- (j) What are the possible sources of geothermal pollution?

SECTION-B

Q2 With the following specifications for an MHD generator, calculate the open circuit voltage and maximum power output.

Plate area= 0.25m²

Distance between plates= 0.50m

Flux density= 2 Wb/m²

Average gas velocity= 10³m/sec

Gaseous conductivity=10 Mho/m

Q3 Find the Thomson heat transferred to the surroundings from a wire whose end points are maintained at 373 and 273 K. A current of 10mA is flowing in the wire and its absolute thermoelectric power increases linearly with temperature at a rate

$$\frac{d\alpha_{s1}}{dT} = 5.4 \times 10^{-9} \text{V/}^{\circ}\text{K}^2$$

Q4 Describe briefly a thermoelectric power generator.

Q5 What are the different types of photovoltaic cells? Explain.

Q6 Write a short note on biomass energy.

SECTION-C

Q7 Explain briefly :

(a) General description of fuel cells and their applications.

(b) Geothermal system.

Q8 How MHD systems are classified? Describe them in brief.

Q9 Discuss the various types of non conventional resources of energy and their future in India.