

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

PAPER ID : 0901

Roll No.

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### B. Tech.

(SEM. VII) ODD SEMESTER THEORY EXAMINATION  
2010-11

### NON CONVENTIONAL ENERGY RESOURCES

Time : 3 Hours

Total Marks : 100

Note : (1) Attempt all questions.

(2) All questions carry equal marks.

1. Attempt any four parts of the following : (5×4=20)

- Discuss different renewable sources with special reference to Indian context.
- Discuss the main features of Non-Conventional Energy Resources.
- What are the advantages and disadvantages of direct energy conversion systems over the conventional power generation systems ?
- Discuss the main applications of Geothermal energy.
- What are the basic requirements for locating a wind power plant ?
- Describe principle of solar photo voltaic energy conversion.

2. Attempt any four parts of the following : (5×4=20)

- Discuss the different practical problems associated with MHD power generation.
- Describe briefly a thermoelectric power generator.

- (c) What are the advantages and disadvantages of concentratic collectors over flat plate collectors ?
- (d) Describe flat plate collectors.
- (e) Describe the factors that affect the size of a Biogas plant. Also describe the materials used for bio-gas generation.
- (f) Explain the working of Deen Bandhu Bio-gas plant.
3. Attempt any **two** parts of the following : **(10×2=20)**
- (a) Explain with sketches the various methods of tidal power generation. What are the limitations of each method ?
- (b) Describe the power generating system using flat plate collector as a source of energy.
- (c) What are the different sources of geothermal energy ? Discuss different systems used for generating the power using geothermal energy in brief.
4. Attempt any **two** parts of the following : **(10×2=20)**
- (a) Explain the basic principle of Ocean Thermal Energy Conversion (OTEC). Describe the “open cycle” OTEC system.
- (b) Describe the principle of working of a  $H_2-O_2$  fuel cell. Also derive the Gibb’s Helmholtz equation for computing the enthalpy of reaction.
- (c) Explain the basic principle of MHD generator. Describe an open cycle fossil fuelled MHD system.
5. Attempt any **two** parts of the following : **(10×2=20)**
- (a) What methods are used to overcome the fluctuating power generation of a wind mill ? Explain the working of horizontal axis two blade wind mill.
- (b) Discuss thermal energy storage system of solar energy. Why it is preferred in solar power plants ?
- (c) Discuss solar cells, its material and applications.