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GUJARAT TECHNOLOGICAL UNIVERSITY BE - SEMESTER-VII • EXAMINATION - WINTER 2013

Subject Code: 170505 Subject Name: Energy Technology Time: 10:30 TO 01:00 Instructions:

- 1. Attempt all questions.
- 2. Make suitable assumptions wherever necessary.
- 3. Figures to the right indicate full marks.
- (a) What are the conventional and non-conventional energy sources? Explain 07 Q.1 in detail.
 - (b) Describe gasification of solid fuels and give detail classification of 07 gasification process.
- (a) What is the significance of proximate and ultimate analysis of coal? 07 **Q.2** Describe in detail mehtod of proximate analysis of coal.
 - (b) Classify the methods of solar energy storage and describe thermal energy 07 storage system

OR

- (b) What is coal preparation? Describe coal washing by froth flotation process. 07
- (a) What are the main applications of a solar pond? Describe solar pond 07 Q.3 briefly.
 - (b) Describe with neat sketch the working of a wind energy system with main 07 components.

OR

- (a) Describe the main considerations in selecting a site for wind generators. **Q.3** 07
 - (b) Discuss the basic steps involved in biogas generation from biomass. 07
- 0.4 (a) Describe binary cycle system for liquid dominated system. 07
 - (b) Describe the closed cycle OTEC system, with its advantages over open 07 cycle system.

OR

- (a) What is fuel cell? Explain the working of ion-exchange membrane type 07 0.4 fuel cell with neat sketch.
 - (b) Explain two stage thermo-chemical transformation of wood to methanol. 07
- Q.5 (a) (i) Classify MHD systems. 07 (ii) With following specifications for MHD generator, calculate the open circuit voltage and maximum power output.Plate area- 0.1 m²,Distance between the plates- 0.5 m, Flux density-3 Wb/m², Average gas velocity-10³ m³/sec,Gaseous conductivity-10 mho/m. 07

(b) Discuss the working and construction of fast breeder reactor.

OR

Q.5 (a) Describe the principle of total flow concept. Compare it with other system. 07 (b) Discuss the materials used for biogas generation and explain the selection 07 criteria of site for biogas plant.

Date: 03/12/2013

Total Marks: 70

Enrolment No._____