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Max. Marks: 70

B.Tech IV Year II Semester (R13) Regular & Supplementary Examinations April 2018 ENERGY RESOURCES & TECHNOLOGY

(Electrical and Electronics Engineering)

Time: 3 hours

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PART – A

(Compulsory Question)

- Answer the following: $(10 \times 02 = 20 \text{ Marks})$
 - (a) Differentiate energy conversion and energy efficiency.
 - (b) List few of the secondary energy sources.
 - (c) Define the plant capacity factor.
 - (d) State any two types of condensers used in thermal power plants.
 - (e) Sketch the block diagram for solar PV energy conversion.
 - (f) Define tip speed ratio.
 - (g) Draw the schematic representation of a linked basis tidal energy conversion system.
 - (h) In the anaerobic digestion biomass conversion process what are the gases and premium fuels obtained?
 - (i) Define energy efficiency of a battery.
 - (j) Outline the principle of MHD power generation.

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 Describe various commercial energy resources availability, energy consumption and growth rate in India.

OR

3 Compare the various fossil fuels availability in India, compare them based on their economy, cost and fuel efficiency.

4 Describe various power generating methods used in India and compare them with their operational cost and efficiency.

OR

- 5 (a) Compare pressurized water reactor (PWR) and fast breeder reactor (FBR) on the basis of principle, construction, cooling and cost.
 - (b) Briefly explain disposal of nuclear waste in nuclear power plant.

UNIT – III)

6 Describe various control mechanisms used in a WECS. Brief about the generator control that is applied.

OR

- 7 (a) With necessary diagram, explain various power conditioners used for the solar PV system.
 - (b) How synchronization is obtained between grid and solar PV system?

UNIT – IV

8 Explain about the main types of OTEC power plants. Describe their working in brief.

OR

9 Delineate the energy extraction technique used in a liquid dominated geothermal system with neat diagram.

UNIT – V

10 Describe the principle and operation of an MHD generator. Derive an expression for maximum power generation per unit volume of the generator.

OR

11 Discuss hydrogen production and hydrogen storage in detail.

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