

Code: 13A02804

B.Tech IV Year II Semester (R13) Regular &amp; Supplementary Examinations April 2018

**ENERGY RESOURCES & TECHNOLOGY**

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 70

**PART – A**

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 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.

**UNIT – II**

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.