

Code: 13A02403

R13

B.Tech II Year II Semester (R13) Supplementary Examinations May/June 2017

ELECTRICAL POWER GENERATING SYSTEMS

(Electrical & Electronics Engineering)

Time: 3 hours

Max. Marks: 70

PART - A

(Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- (a) What are the uses and demerits of thermal power stations?
 - (b) What is the criteria for selection of site for thermal power stations?
 - (c) Classify hydro electric plants.
 - (d) List the types of nuclear reactions.
 - (e) What is the principle of PV cell and draw the V-I characteristics for maximum power.
 - (f) Describe the economical aspects of wind generators.
 - (g) What are the types of bio digesters?
 - (h) Differentiate OTEC and tidal energy systems.
 - (i) What is the maximum demand tariff?
 - (j) Define diversity factor.

PART - B

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

UNIT - I

- 2 With a neat schematic layout of TPS, explain the operation of various components of coal fired thermal stations.

OR

- 3 With a neat schematic, explain the operation of a water tube boiler.

UNIT - II

- 4 Explain the major components of a typical hydropower station with a neat schematic.

OR

- 5 Explain the operation of a liquid coolant nuclear power station using heat exchanger.

UNIT - III

- 6 Explain the principles of solar radiation.

OR

- 7 Explain the operation of a vertical axis wind turbines.

UNIT - IV

- 8 Explain the working and applications of mini hydel plants.

OR

- 9 Explain the principles of geothermal energy harnessing.

UNIT - V

- 10 Write a note on the problems and choice of size and number of generator units for load studies.

OR

- 11 A three phase synchronous motor is connected in parallel with a load of 500 kW at 0.8 pf lagging and its excitation is adjusted until it raises the total power factor to 0.9 lagging. If the mechanical load on the motor including losses takes 175 kW, calculate the kVA input to the motor. Draw the phasor diagram on the conditions.