

B.Tech II Year II Semester (R13) Regular Examinations May/June 2015
ELECTRICAL POWER GENERATING SYSTEMS
 (Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 70

PART – A
 (Compulsory Question)

- 1 Answer the following: (10 X 02 = 20 Marks)
- What is the use of air pre heater in a steam power station?
 - Distinguish between water tube boilers and fire tube boilers
 - Sketch the V-I characteristics of a solar panel.
 - Outline two reasons why it may be difficult to replace fossil fuels with wind power.
 - Based on type of feeding, classify the Biogas Plants.
 - How many types of geothermal resources are there?
 - Discuss the disadvantages of nuclear power plants.
 - What is the significance of surge tank in a hydro power station?
 - The maximum demand on a power station is 500 MW. If the annual load factor is 30%, Calculate the total energy generated per year.
 - Define plant use factor.

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

UNIT – I

- 2 (a) What are the advantages and disadvantages of steam power station?
 (b) Explain the super heater in thermal plants.

OR

- 3 Draw a typical layout of a thermal power plant and describe the function of each component.

UNIT – II

- 4 (a) What are different types of turbines used in hydro electric power plant? Discuss in detail.
 (b) What are the different parameters to be considered to construct a hydro electric power plant?

OR

- 5 With a neat schematic diagram, explain the operation of a nuclear power plant. Also discuss the advantages and disadvantages.

UNIT – III

- 6 (a) What is the principle of solar photovoltaic power generation?
 (b) Why energy storage is needed in solar systems? Explain the different types of energy storage methods available.

OR

- 7 (a) Derive the expression for power developed due to wind? Discuss the advantages and disadvantages of horizontal and vertical axis windmill.
 (b) Write short notes on (i) Savonius rotor (ii) Darrieus Rotor.

UNIT – IV

- 8 Describe the working of a Mini Hydel power plant? Explain the advantages and disadvantages of geothermal energy over the other forms of energy.

OR

- 9 Explain various biomass energy conversion technologies in detail.

UNIT – V

- 10 (a) What are the desirable characteristics of a tariff? Define Two-Part Tariff.
 (b) The tariff in force is Rs.150 per kVA of maximum demand and 8 paise per unit consumed. If the load factor is 30%, find the overall cost per unit at (i) unity power factor (ii) 0.7 power factor (Assume Maximum demand is 1kVA).

OR

- 11 (a) Explain the importance of load curve in a generation system.
 (b) A generating station has the following daily load cycle

Time (hrs)	0-6	6-10	10-12	12-16	16-20	20-24
Load (MW)	40	50	60	50	70	40

Draw the load curve and find: (i) Maximum demand. (ii) Units generated per day. (iii) Average load and load factor.
