

**GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN**

(Autonomous)

(Affiliated to Andhra University, Visakhapatnam)

II B.Tech. - II Semester Regular Examinations, April – 2026**POWER SYSTEMS 1**

[Electrical and Electronics Engineering]

1. All questions carry equal marks
2. Must answer all parts of the question at one place

Time: 3Hrs.**Max Marks: 70****UNIT-I**

1. a. Explain the principle of operation of hydro power plant with neat diagram?
b. Enumerate essential elements of hydroelectric power plant.

OR

2. a. Briefly describe the main parts and the working of a steam power station with neat diagram.
b. Draw a neat schematic diagram of feed water/steam flow circuit of a modern large thermal power plant. Explain the working.

UNIT-II

3. a. What are the merits and demerits of nuclear power plants?
b. Describe with the help of a neat sketch the working principle of pressurized water reactor.

OR

4. a. Explain the main parts and the working of a gas turbine power station with neat diagram.
b. Explain the main parts and the working of a diesel power station with neat diagram.

UNIT-III

5. a. Explain the radial distribution system with neat diagram and list out its merits and demerits.
b. A 2 wire DC distributor ABCDEA in the form of a ring main is fed at point 'A' at 230V and is loaded as follows: 20A at B, 40A at C, 60A at D and 20A at E. The resistances of various sections (ground and return) are $AB = 0.1\Omega$, $BC = 0.05\Omega$, $CD = 0.01\Omega$, $DE = 0.025\Omega$ and $EA = 0.075\Omega$. Determine the point of minimum potential and current in each section of distributor.

OR

6. a. What are the advantages of Doubly Fed distributor over Singly Fed Distributor?
b. A two wire distributors are fed at F1 and F2 at 230 V and 220 V respectively. Loads of 150 A and 100 A are taken at points P and Q. Resistance of both the conductors between F1 P is 0.03Ω , between PQ is 0.05Ω and between QF2 is 0.02Ω . Determine the current in each section of the distributor and voltage at each load point.

UNIT-IV

7. a. Explain the following: (i) load curve and (ii) load duration curve
b. Calculate the annual load factor of 120 MW power station deliver 110MW for 4hours, 60MW for 10 hours and is shut down for the rest of each day. For general maintenance, it is shut down for 60 days per annum.

OR

8. a. Explain different tariff methods.
b. A thermal power station fixed costs is Rs. 600 per kW of installed capacity per annum. The fuel and operating costs are 12 paise per kWh generated. Calculate cost of energy generated per kWh at the following station load factor. (i) 25%, (ii) 50% and (iii) 100%. Comment on the results.

UNIT-V

9. a. What are the merits and demerits of a gas insulated substations?
b. Draw and explain the sectionalized single bus bar system? List out its merits and demerits

OR

10. a. State the advantages of outdoor substations over indoor substations
b. Explain the constructional aspects of GIS.