



**SIDDHARTH GROUP OF INSTITUTIONS (AUTONOMOUS)**  
**(Approved by AICTE, New Delhi & Affiliated to JNTUA, Ananthapuramu)**  
**(Accredited by NAAC with “A” Grade & ISO 9001 : 2008 Certified Institution)**  
**QUESTION BANK**

**Subject with Code :** GENERATION OF ELECTRICAL POWER (20EE0203)

**Course & Branch :** B. Tech -EEE

**Year & Semester :** II - B. Tech. & I - Semester

**Regulation :** R20

**UNIT-I**

**THERMAL AND HYDRO POWER GENERATING SYSTEMS**

1	a) What is a steam power station? Discuss its advantages and disadvantages b) What are the factors considered, while selecting the site for a thermal power station? c) Discuss about the coal handling plant	[L1][CO1] [4M] [L1][CO1] [4M] [L1][CO1][4M]
2	Draw the schematic diagram of a modern steam power station and explain its operation.	[L2][CO1][12M]
3	Explain the important components of a steam power station.	[L1][CO1][12M]
4	Explain the function of the following in thermal power plant and explain the principle of operation of each. i) Super heater ii) Cooling tower iii) Boilers	[L2][CO1][12M]
5	a) What are the differences between thermal and hydro power plant. b) Explain the function of the following in thermal power plant. a) Economizer b) Electrostatic Precipitator c) Condenser	[L1][CO1][6M] [L2][CO1][6M]
6	a) State the advantages and disadvantages of hydro power plant. b) What are the factors considered, while selecting the site for a Hydro power station?	[L2][CO2][6M] [L1][CO2][6M]
7	Explain the important components of a hydro power station.	[L2][CO2][12M]
8	Explain different types of Water turbines used in the Hydro power plant.	[L2][CO2][12M]
9	Discuss working of a hydro-electric plant with a neat diagram.	[L2][CO2][12M]
10	Write a short note on (i) Surge tank (ii) Penstock (iii) Forebay	[L3][CO2][12M]

**UNIT -II**  
**NUCLEAR POWER GENERATING SYSTEMS**

1	Write a short note on following (i) Nuclear fission and fusion (ii) nuclear fuels	[L3][CO3][12M]
2	(a) Explain Nuclear chain Reaction (b) Discuss the factors consider for the selection of site in nuclear power plant	[L2][CO3][6M] [L2][CO3][6M]
3	Draw the schematic diagram of a nuclear power station and discuss its operation.	[L1][CO3][12M]
4	Draw the schematic diagram of a nuclear reactor and discuss its operation.	[L1][CO3][12M]
5	Discuss the following components in nuclear power station briefly. a) Moderator (b) Control rods (c) Reflector (d) Coolant (e) Nuclear reactor	[L2][CO3][12M]
6	a) Explain shielding and safety precautions in nuclear power plants b) State the advantages and disadvantages of Nuclear power plant	[L1][CO3][6M] [L1][CO3][6M]
7	State the types of reactors used in nuclear power station. Explain about the boiling water reactor	[L2][CO3][12M]
8	a) Explain about the fast breeder reactor. b) Explain the operating mechanism of control rods in a nuclear power plants	[L2][CO3][6M] [L2][CO3][6M]
9	Write short note on a) FBR b) PWR	[L1][CO2][12M]
10	Compare thermal, hydro and nuclear power plants on the basis of technical, mechanical and economical aspects.	[L2][CO2][12M]

### UNIT-III

#### SOLAR & WIND POWER GENERATING SYSTEMS

1	a)What is the role and potential of solar energy? Explain in detail. b) List the applications of solar energy.	[L1][CO4][6M] [L1][CO4][6M]
2	a)Explain the construction of Flat plate collectors with neat diagram b) Explain the working principle of concentrating collectors	[L2][CO4][6M] [L2][CO4][6M]
3	What is solar energy storage? Explain their methods.	[L2][CO4][12M]
4	a)What is the need for solar thermal energy storage? b) Explain solar pond with neat diagram?	[L1][CO4][6M] [L2][CO4][6M]
5	a) Explain PV cell construction and operation. b) Discuss about the VI characteristics of PV cell	[L2][CO4][6M] [L1][CO4][6M]
6	(a) What is the role and potential of wind energy? Explain in detail. (b)Describe the different types of wind mills	[L2][CO4][6M] [L2][CO4][6M]
7	(a)Explain 1) Horizontal Axis wind mills. 2) Vertical Axis wind mills.	[L2][CO4][6M]
8	Explain principle of operation and working of Wind Power Plant.	[L2][CO4][12M]
9	a) Explain Power- Speed characteristics b) Explain Torque- Speed Characteristics	[L2][CO4][6M] [L2][CO4][6M]
10	(a)Explain Pitch and Yaw control in wind turbine. (b)What are the merits and demerits wind power systems	[L2][CO4][6M] [L1][CO4][6M]

## UNIT-IV

### BIOGAS, GEOTHERMAL AND OCEAN POWER GENERATING SYSTEMS

1	a)How biomass conversion takes place? b) What is difference between biomass and biogas?	[L1][CO5][6M] [L1][CO5][6M]
2	a)How are biogas plants classified? Explain them briefly. b)Explain any one type of biogas digester with neat diagram and their advantages and disadvantages	[L1][CO5][6M] [L2][CO5][6M]
3	a) What factors are taken into account while selecting the site for a bio-gas plant? b) What are the Economic and Environmental Aspects of Bio gas generation?	[L1] [CO5][6M] [L1] [CO5][6M]
4	a) Explain the factors affecting bio-digestion of gas? b) Write some applications of biogas.	[L2][CO5][6M] [L2][CO5][6M]
5	What is Geo thermal energy? How can geothermal energy be converted into electrical energy?	[L1][CO5][12M]
6	Draw schematic diagram of geothermal system and explain the working principle?	[L1][CO5][12M]
7	a) What are the advantages and disadvantages of geothermal energy? b) Write some applications of geothermal Energy?	[L1][CO5][6M] [L1][CO5][6M]
8	a)What is ocean energy? How is it produced? b) What is basic principle of ocean thermal energy conversion	[L1][CO5][6M] [L1][CO5][6M]
9	Explain different types of Geothermal sources	[L2][CO5][12M]
10	Explain with neat sketch about OTEC system?	[L2][CO5][12M]

**UNIT-V**

**ECONOMIC ASPECTS OF POWER GENERATION**

1	Write short notes on the following (a) Load factor (b) Demand factor (c) Diversity factor	[L1][CO6][12M]														
2	A generating station has the following daily load cycle. <table style="margin-left: auto; margin-right: auto;"><tr><td>Time (hrs)</td><td>0-6</td><td>6-10</td><td>10-12</td><td>12-16</td><td>16-20</td><td>20-24</td></tr><tr><td>Load (MW)</td><td>30</td><td>40</td><td>20</td><td>70</td><td>50</td><td>40</td></tr></table> Draw the load curve and find i) Maximum demand ii) Units generated per day iii) Average load and load factor .	Time (hrs)	0-6	6-10	10-12	12-16	16-20	20-24	Load (MW)	30	40	20	70	50	40	[L3][CO6][12M]
Time (hrs)	0-6	6-10	10-12	12-16	16-20	20-24										
Load (MW)	30	40	20	70	50	40										
3	a) What is load curve? what is the importance of load curve	[L1] [CO6][6M]														
	b) What is load? Explain different types of loads.	[L1] [CO6][6M]														
4	a) What is load factor? What is the importance of Load factor.	[L1][CO6][4M]														
	b) A generating plant has a maximum capacity of 100 kW and costs Rs 1,60,000. The annual fixed charges are 12% consisting of 5% interest, 5% depreciation and 2% taxes. Find the fixed charges per kWh if the load factor is (i) 100% and (ii) 50%.	[L3][CO6][8M]														
5	What do you understand by 'Economics of power generation'? Discuss the different costs of electrical energy	[L2][CO6][12M]														
6	a) Explain how a load duration curve is plotted. What is its use?	[L4][CO6][6M]														
	b) What are the objectives of Tariffs?	[L4][CO6][6M]														
7	a) Explain different types of power factor tariffs	[L1][CO6][6M]														
	b) The maximum demand of a consumer is 20 A at 220 V and his total energy consumption is 8760 kWh. If the energy is charged at the rate of 20 paise per unit for 500 hours use of the maximum demand per annum plus 10 paise per unit for additional units, calculate : (i) annual bill (ii) equivalent flat rate.	[L4][CO6][6M]														
8	a) Discuss Difference between two-part tariff and Three –part tariff	[L2][CO6][6M]														
	b) Define Flat rate, block rate tariff and power factor tariff.	[L2][CO6][6M]														
9	a) What is Tariff ? What are the Desirable Characteristics of a Tariff?	[L1][CO6][6M]														
	b) Consumer has a maximum demand of 200 kW at 40% load factor. If the tariff is Rs. 100 per kW of maximum demand plus 10 paise per kWh, find the overall cost per kWh.	[L2][CO6][6M]														
10	A annual peak load on a 30 MW power station is 25MW. The power station supplies loads having maximum demands of 10MW, 8.5MW, 5MW and 4.5MW. the annual load factor is 45% Find i) Average load. ii) Energy supplied per year. iii) Demand factor	[L4][CO6][12M]														