PRESIDENCY UNIVERSITY

BENGALURU

End - Term Examinations – MAY 2025
Date: 31-05-2025   **Time:** 01:00 pm – 04:00 pm

School: SOE	Program: B. Tech-EEE	
Course Code: EEE2030	Course Name: Electric Power Generation and Economics	
Semester: II	Max Marks: 100	Weightage: 50%

CO - Levels	CO1	CO2	CO3	CO4	CO5
Marks	24	28	24	24	--

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks.   **10Q x 2M=20M**

1.	Recall the classification of Hydroelectric Power Plant Based on Availability of Water Flow	2 Marks	L1	CO1
2.	What is the importance of spillways in hydroelectric power plant?	2 Marks	L1	CO1
3.	List the material used for moderator and coolant in nuclear power plant	2 Marks	L1	CO2
4.	List the advantages of thermal power plant	2 Marks	L1	CO2
5.	Define the terms direct radiation and diffused radiation in solar system	2 Marks	L1	CO2
6.	What is the function of Economiser in thermal power plant?	2 Marks	L1	CO2
7.	Define the term maximum demand and demand factor.	2 Marks	L1	CO3
8.	How the average load is calculated for a day and for a month.	2 Marks	L1	CO3
9.	Define diversity factor and coincidence factor	2 Marks	L1	CO4
10.	What is block rate tariff and simple tariff	2 Marks	L1	CO4

Part B

Answer the Questions.   **Total Marks 80M**

11.	a.	Electricity is the backbone of modern society. From powering our homes, businesses, and industries to enabling communication and transportation, electricity plays a vital role in our daily lives. In brief explain the various power generation methods in India	10 Marks	L2	CO1
	b.	A fuel cell power plant is a technology used in aviation applications to provide improved performance and environmental compatibility. With neat sketch explain the working of fuel cell power plant.	10 Marks	L2	CO1
Or					
12.	a.	Hydroelectricity is clean and cost effective, however it carries safety risks. Explain various control and protective mechanisms and safety measures adopted in hydroelectric power plants	10 Marks	L2	CO1
	b.	The benefits of hydropower have been recognized and harnessed for thousands of years. In addition to being a renewable and cost-effective form of energy, hydropower plants can provide power to the grid immediately, serving as a flexible and reliable form of backup power during major electricity outages or disruptions. With neat sketch explain the layout/structure of hydroelectric power plants	10 Marks	L2	CO1

13.	a.	With neat sketch explain the layout/structure of Nuclear power plants	10 Marks	L2	CO2
	b.	Site selection for thermal power plants involves carefully considering various factors to ensure efficient operation and minimize environmental and social impacts. Explain various factors to be considered for selection of site for a thermal power plant	10 Marks	L2	CO2
Or					
14.	a.	A wind power plant, also known as a wind farm or wind park, is a collection of wind turbines that generate electricity from the kinetic energy of the wind. Explain various parts of wind power plant	10 Marks	L2	CO2
	b.	With neat sketch explain the construction and working of PV cells	10 Marks	L2	CO2

15.	a.	Explain the following terms with respect to electrical power i) Plant capacity factor ii) Plant Use Factor iii) Utilization Factor iv) Load curve v) Load Duration curve	10 Marks	L2	CO3

	b.	A power plant supplies the following loads to various consumers: Industrial consumers = 1500 kW Commercial established = 750 kW Domestic power = 100 kW Domestic Light = 450 kW If the maximum demand on the station is 2500 kW and the number of kWh generated/ year is $45×10^5$ Compute the diversity factor and annual load factor.	10 Marks	L3	CO3
		Or			
16.	a.	Explain the concept of load factor and diversity factor and their effect on the cost of Electrical Energy.	10 Marks	L2	CO4
	b.	A generating station of 1MW capacity is supplying a region with following demands. 	From	To	Demand (kW)	 | midnight	5 am	100	 | 5 am	6 pm	No-load	 | 6 pm	7 pm	800	 | 7 pm	9 pm	900	 | 9 pm	midnight	400	 i) Construct the load curve and load duration curve ii) Compute the load factor	10 Marks	L2	CO4

17.	a.	Explain the concept of Electrical power tariff and also explain the various factors influencing the rate of tariff designing.	10 Marks	L2	CO4
	b.	A consumer has a maximum demand of 300 kW at 35% load factor. If the tariff is Rs. 125 per kW of maximum demand plus 15 paise per kWh, solve for the overall cost per kWh.	10 Marks	L3	CO4
		Or			
18.	a.	Explain the different types of tariffs in practice	10 Marks	L2	CO4
	b.	A power plant supplies the following loads to various consumers: Industrial consumers = 1500 kW Commercial established = 750 kW Domestic power = 100 kW Domestic Light = 450 kW If the maximum demand on the station is 2500 kW and the number of kWh generated/ year is $45×10^5$ Compute the diversity factor and annual load factor.	10 Marks	L3	CO4