O.P.Code: 23EE0213	R23	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech. II Year II Semester Supplementary Examinations December-2025

POWER SYSTEMS-I

(Electrical & Electronics Engineering)

Time: 3 Hours **Max. Marks: 70**

PART-A

(Answer all the Questions **10 x 2 = 20** Marks)

1	a	What is meant by the phenomenon "water hammer"?	CO1	L1	2M
	b	What is the Pulverization and write its advantages in thermal power station.	CO1	L1	2M
	c	What are the different types of nuclear fuels used in nuclear power stations?	CO2	L1	2M
	d	What is the purpose of a moderator in a nuclear power reactor?	CO2	L1	2M
	e	List out the different types of substations.	CO3	L1	2M
	f	What is the purpose of instrument transformer in substation?	CO3	L1	2M
	g	What is a service main in distributed systems.	CO4	L1	2M
	h	What are the requirements of the cables?	CO4	L1	2M
	i	Define diversity factor and plant capacity factor.	CO5	L1	2M
	j	What is maximum demand?	CO5	L1	2M

PART-B

(Answer all Five Units **5 x 10 = 50** Marks)

UNIT-I

2	a	State the advantages and disadvantages of hydro power plant.	CO1	L2	5M
	b	What are the factors considered, while selecting the site for a Hydro power station?	CO1	L1	5M
		OR			
3		Explain the operation of the following components in thermal power plant i) Super heater ii) Condenser iii) Boilers (iv) Economizer (v) Electrostatic precipitator.	CO1	L1	10M

UNIT-II

4	a	Explain about the fast breeder reactor.	CO2	L2	5M
	b	Explain about Boiling water reactor (BWR).	CO2	L2	5M
		OR			
5		Write a short note on following (i) Nuclear fission and fusion (ii) nuclear fuels	CO2	L3	10M

UNIT-III

6		Gives the comparison of outdoor and indoor substations	CO3	L3	10M
		OR			
7		What are the different type of busbar arrangement used in substations? Explain with suitable diagrams.	CO3	L2	10M

UNIT-IV

8	a	Briefly discuss different types of distribution systems.	CO4	L2	6M
	b	Compare AC and DC distribution systems.	CO4	L2	4M
		OR			
9	a	List the advantages and disadvantages of underground cables.	CO4	L2	5M
	b	Calculate the capacitance and charging current of a single core cable used on a 3-phase, 66kV system. The cable is 1 km long having a core diameter of 10 cm and an impregnated paper insulation of thickness of 7 cm. the relative permittivity of insulation may be taken as 4 and the supply at 50Hz.	CO4	L3	5M

UNIT-V

10	a	Explain how a load duration curve is plotted. What is its use?	CO5	L2	5M
	b	Write short notes on the following (i) Load factor (ii)Demand factor (iii)Diversity factor	CO5	L2	5M
		OR			
11	a	Explain different types of power factor tariffs.	CO5	L1	4M
	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.	CO5	L3	6M

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