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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech. II Year II Semester Regular Examinations July/August-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 are the functions of surge tank in hydro plants?	CO1	L1	2M
	b	What is the Thermal Efficiency of Steam Power Plant?	CO1	L1	2M
	c	What are the different types of nuclear fuels used in nuclear power stations?	CO2	L1	2M
	d	Write the three important factors in choosing a site for nuclear power plant.	CO2	L1	2M
	e	What is the need of substation in power system?	CO3	L1	2M
	f	Write need of any two substation equipments	CO3	L1	2M
	g	Define the terms Distributor and feeder.	CO4	L1	2M
	h	Give the relation for insulation resistance of a cable.	CO4	L2	2M
	i	What is meant by three-part tariff?	CO5	L1	2M
	j	Define the integrated load duration curves.	CO5	L1	2M

PART-B

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

UNIT-I

2	a	What is a steam power station? Discuss its advantages and disadvantages.	CO1	L1	5M
	b	What are the factors considered, while selecting the site for a thermal power station?	CO1	L1	5M

OR

3		Draw and explain the general layout of hydroelectric power plant.	CO1	L1	10M

UNIT-II

4		Draw the schematic diagram of a nuclear power station and discuss its operation.	CO2	L1	10M

OR

5		Explain the various types of water coolant reactors used in nuclear power station.	CO2	L2	10M

UNIT-III

6		Discuss the different ways of classifications of substations.	CO3	L2	10M

OR

7	a	Explain the single busbar arrangement in substations	CO3	L1	5M
	b	Explain the double bus bar arrangement with one circuit breaker in substation.	CO3	L1	5M

UNIT-IV

8	a	Derive the expression for Insulation resistance of a cable.	CO4	L3	5M
	b	Obtain the expression for the capacitance of a single core cable.	CO4	L3	5M

OR

9		What is a cable? Explain the types of insulating materials used in cables.	CO4	L1	10M

UNIT-V

10	a	What are the objectives of Tariffs?	CO5	L2	5M
	b	What is load factor? What is the importance of Load factor?	CO5	L1	5M

OR

11	a	Explain different types of power factor tariffs	CO5	L2	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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