Course Code: 2050208 **Roll No:** **MLRS-R20** 19/12/22 (AN)

MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section2(f) & 12(B)of the UGC act,1956

III B.Tech I Sem Regular End Examination, December 2022

Power Systems – I

(EEE)

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

Note: 1. Question paper consists: Part-A and Part-B.
2. In Part – A, answer all questions which carries 20 marks.
3. In Part – B, answer any one question from each unit.
Each question carries 10 marks and may have a, b as sub questions.

PART- A

(10*2 Marks = 20 Marks)

1.	a)	Why is the overall efficiency of a steam power station very low?	2M	CO1	BL4
	b)	Give the applications of fuel cells.	2M	CO1	BL2
	c)	How will you improve the diversity factor of a power station?	2M	CO2	BL2
	d)	What is the effect of power factor on cost of generation?	2M	CO2	BL2
	e)	What is bundling of conductors?	2M	CO3	BL1
	f)	What do you mean by dielectric strength of air?	2M	CO3	BL1
	g)	What are the causes of failure of insulators?	2M	CO4	BL2
	h)	What are the main requirements of insulating materials used for underground cables?	2M	CO4	BL2
	i)	What is a booster?	2M	CO5	BL1
	j)	What are the advantages of ring main distributor?	2M	CO5	BL2

PART- B

(10*5 Marks = 50 Marks)

2	a)	Draw a neat schematic diagram of a hydro electric power plant and explain the functions of various components.	5M	CO1	BL2
	b)	Discuss the factors for the choice of site for a nuclear power plant.	5M	CO1	BL2
		OR			
3	a)	Analyze the wind characteristics, performance and limitations of energy conversion systems.	5M	CO1	BL3
	b)	Illustrate the energy storage methods.	5M	CO1	BL4
4	a)	Describe the load curve. Explain how load curves help in the selection of size and number of generating units.	5M	CO2	BL2
	b)	Why is the load on a power station variable? Analyze the effects of variable load on operation of power station.	5M	CO2	BL3
		OR			

5	a)	Classify and explain load power plants.	5M	CO2	BL2
	b)	Describe the desirable characteristics and objectives of tariff.	5M	CO2	BL2
6	a)	A 3 phase transmission line 100 km long has its conductors of 0.5 cm diameter spaced at the corners of the equilateral triangle of 120 cm side. Find the inductance per phase of the system.	5M	CO3	BL3
	b)	Derive the expression for capacitance of an unsymmetrical transposed 3 phase transmission line.	5M	CO3	BL2
		OR			
7	a)	Discuss the methods to reduce corona. Discuss advantages and disadvantages of corona.	5M	CO3	BL2
	b)	What is meant by disruptive critical voltage and visual critical voltage? State the effects of conductor size, spacing and condition of the surface of conductors on these voltages.	5M	CO3	BL2
8	a)	Explain strain and shackle insulators with the help of neat sketches.	5M	CO4	BL2
	b)	Discuss the electrical and mechanical characteristics required for a good insulator HV lines.	5M	CO4	BL2
		OR			
9	a)	Explain the classification of cables.	5M	CO4	BL2
	b)	Explain why and how grading of cables is done.	5M	CO4	BL2
10	a)	Explain briefly 3 phase, 4 wire system of AC distribution system.	5M	CO5	BL2
	b)	Discuss the factors influencing site selection for substation.	5M	CO5	BL2
		OR			
11	a)	Explain 2 wire DC system of distribution of electrical power.	5M	CO5	BL2
	b)	Differentiate overhead and underground distribution system.	5M	CO5	BL4

---oo0oo---

CO - Course Outcome **BL - Blooms Taxonomy Levels**