

**II B. Tech II Semester Supplementary Examinations, April - 2021****POWER SYSTEMS-I**

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)  
 2. Answer **ALL** the question in **Part-A**  
 3. Answer any **FOUR** Questions from **Part-B**

**PART -A**

1. a) List the factors that need to be considered for selection of site for a Thermal Power station. [3M]
- b) List the advantages or feasibility of a Nuclear Power station [2M]
- c) Write a short note on various systems of dc distribution [2M]
- d) Distinguish between indoor and outdoor type substations [3M]
- e) Give the significance and requirement of Armouring and covering of a Cable [2M]
- f) Explain the significance of load curves [2M]

**PART -B**

2. a) Explain about the Ash disposal and Dust collection system in Thermal Power station [7M]
- b) Explain the significance of Air preheater and Cooling towers in Thermal Power station [7M]
3. a) Explain the working of Pressurized Water Reactor(PWR) with a neat diagram [7M]
- b) What are precautions and care that need to be taken from radiation hazards and nuclear waste disposal [7M]
4. Prove that the voltage drop diagram for a uniformly loaded distributor fed at one end is a parabola. [14M]  
 A distributor of length 'L' meters has a distributed load of I amps/meter. Show by means of diagrams the current loading and voltage drop at any point along its length when it is fed i) at one end ii) at both ends (at equal potential). Also prove that maximum drop in case ii) is only one – fourth of case i)
5. a) Explain the configuration of Double Bus-bar with Bypass isolators with a neat lay out [7M]
- b) Compare between Gas insulated substations with Air insulated substations [7M]
6. a) Explain the concept of power factor in cables [7M]
- b) The insulation resistance of a single core cable is 460 M ohm per km. If the core diameter is 3 cm and the resistivity of insulation is  $4.5 \times 10^{14}$  ohm – cm, find the insulation thickness [7M]



7. a) Explain in detail about i)Block rate tariff and ii) maximum demand Tariff [7M]
- b) A generating station supplied the following loads: 150 MW, 120 MW, 85 MW, 60 MW and 5 MW. The station has a maximum demand of 220 MW. The annual load factor of the station is 48%. Calculate i) the number of units supplied annually ii) the diversity factor and iii) the Demand factor [7M]

