II B. Tech II Semester Supplementary Examinations, February - 2022
POWER SYSTEMS - I
(Electrical and Electronics Engineering)
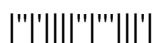
Time: 3 hours   Max. Marks: 75

Answer any **FIVE** Questions each Question from each unit
All Questions carry **Equal** Marks
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1	a)	Explain the working of a Water tube boiler with a neat simplified diagram.	[8M]
	b)	Explain the various factors that need to be considered for selection of proper furnace.	[7M]

Or

2	a)	What is an Ash handling system and explain the various groups or methods involved in it.	[10M]
	b)	List the reasons for providing chimney in thermal power stations.	[5M]

3	a)	Distinguish between Nuclear Fission and Nuclear fusion.	[7M]
	b)	List the advantages and disadvantages of Nuclear power station.	[8M]

Or

4	a)	Distinguish in detail between pressurized water reactor and Boiling water reactor.	[8M]
	b)	What are the different types of radiations that occur in Nuclear station and various hazards caused by these radiations?	[7M]

5	a)	Distinguish in detail between Indoor substations and outdoor substations.	[8M]
	b)	Explain the various tests performed on the gas insulted substations in brief.	[7M]

Or

6		List and explain the various equipment required for substations and switch gear installations in detail.	[15M]

7	a)	Explain the following terms related to cables: i)Armouring of cables and ii) Sheathing in cables.	[8M]
	b)	Distinguish in detail between overhead lines and underground cables.	[7M]

Or

8	a)	Explain the concept of capacitance in three core cables.	[7M]
	b)	Find the most economical diameter of a single – core cable to be used on a 132 KV, three phase system. Find also the overall diameter of the insulation if the peak permissible stress is not to exceed 75 KV per cm.	[8M]

9	a)	Explain the following terms w.r.t Economic Aspects: i) Plant use factor ii) Demand factor.	[8M]
	b)	A base load station having a capacity of 500 MW and a stand by station having a capacity of 100 MW share a common load. Find the annual load factors and capacity factors of two power stations from the data. Annual standby station output = 90 x 10^6 KWH, Annual base load station output = 120 x 10^6 KWH, Peak load on standby station 150 MW, Hours of use by standby station/ year = 3200 hours.	[7M]

Or

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10 a) Explain in detail about the Power factor Tariffs.   [7M]

   b) A power plant of 200 MW installed capacity has the following data: [8M]
Capital cost = Rs2000/KW installed; interest and depreciation = 12%; Annual load factor = 0.6; Annual capacity factor = 0.5; Annual running charges = Rs30 x 10^6; Energy consumed by the power plant auxiliaries = 6%. Calculate i)Reserve capacity and ii)Generating cost.

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