Code No: R1622025 **R16** SET - 1

II B. Tech II Semester Supplementary Examinations, November - 2019
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**

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PART –A

1. a) Explain the purpose of an economizer in a thermal power station. [2M]
   b) Give the different classifications of Nuclear reactors and on what basis it is done. [2M]
   c) Distinguish between radial and Ring main systems. [3M]
   d) Distinguish between Main and transfer Bus bar. [3M]
   e) What do you mean by capacitance grading in cables. [2M]
   f) What are base and peak load plants and give their significance. [2M]

PART -B

2. a) Explain in detail about the functioning of feed water and steam flow circuit for a boiler – turbine unit of a thermal power plant with a neat layout connection diagram. [10M]
   b) What are the types of fuels used in thermal power plants? Briefly Discuss. [4M]

3. a) Explain the basic components of a nuclear reactor with a neat sketch. [7M]
   b) Compare between Thermal and Fast Breeder reactors. [7M]

4. In a three phase, 4 wire distribution system with 240 volts between the neutral there is a balanced motor load of 250 KV at power factor 0.8. Lamps loads connected between respective lines and neutral absorb 25, 75, and 100 KW. Calculate the current in each line and in the neutral wire of the feeder cable. [14M]

5. a) Explain the single Bus - bar with Bus sectionalizer scheme with a neat connection diagram. [7M]
   b) List the advantages of Gas insulated substations. [7M]

6. A 33 KV three phase underground cable,4 Km long, uses three single cables. Each of the conductors has a diameter of 2.5 cm and radial thickness of insulation is 0.5 cm. The relative permittivity of the dielectric is 3. Determine: [14M]
   i) capacitance of the cable/phase ii) charging current/phase iii) Total charging KVAR iv) Dielectric loss/phase if the power factor of the unloaded cable is 0.02. v) Maximum stress in the cable.

7. Write short notes on the following: [14M]
   i) Thermal characteristics of a underground cables
   ii) Reduction of costs by inter connection of stations

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