

**II B. Tech II Semester Regular/Supplementary Examinations, November - 2020****POWER SYSTEMS-I**

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 70

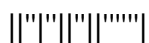
- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)  
 2. Answer **ALL** the question in **Part-A**  
 3. Answer any **FOUR** Questions from **Part-B**
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**PART -A**

1. a) Discuss the advantages Electro-static precipitator over mechanical ash precipitator . (2M)
- b) What is a nuclear reactor? (3M)
- c) What is distribution system? Define bus-bar. (2M)
- d) What is grading of a cable? why grading is required for cable? (2M)
- e) Compare Air insulated substations and Gas insulated substations. (3M)
- f) Define Simple rate, Flat Rate Tariff. (2M)

**PART -B**

2. a) Draw the layout of Thermal power station? and define the following terms. (7M)  
 (i) Super heater. & (ii) Ash handling plant.
- b) Describe with a neat sketch the construction, principle of operation and application of Economizers. (7M)
3. a) Describe the construction and uses of nuclear reactor core. (7M)
- b) Describe with neat sketches the construction and operation of (i) CANDU type reactor and (ii) Fast breeder reactor. (7M)
4. a) What is an interconnector? Discuss its advantages in distribution system also compare a 3-phase, 4-wire system of distribution with the single phase system. (7M)
- b) A 500m long single phase A.C distributor has a total impedance of  $(0.02+j0.04)\Omega$  and is fed from one end at 240V. It is loaded as follow: 50A at unity power factor, 200m from feeding point; 100A at 0.8 power factor lagging, 300m from feeding point; 50A at 0.6 power factor lagging at far end. calculate (i) Total voltage drop ,(ii) Voltage at far end. (7M)
5. a) Discuss various bus bar systems for distribution networks with the help of figures. (7M)
- b) Explain the constructional aspects of Gas Insulated Substation. And state its limitations. (7M)



6. a) What is the purpose of using the intersheaths in a cable? Show that in a cable using two intersheaths the maximum stress is reduced to of maximum stress. (7M)
- b) A single core lead sheathed cable has a conductor diameter of 3cm, the diameter of the cable is 8.5cm. The cable is graded by using two dielectrics of relative permittivities of 5 and 3 with corresponding safe working stress o 38KV/cm and 6KV/cm. find (7M)
- Radial thickness of each insulation.
  - the safe working voltage of the cable.
7. a) What are the Characteristics of daily load curve? Define the terms: the load factor and diversity factor and discuss their effect on the cost of generation of electrical energy. (7M)
- b) A Power system has following load particulars. (7M)

	Maximum Demand	Load factor	Diversity between consumers
1. Residential load	1000 KW	0.2	1.3
2. Commercial load	2000 KW	0.3	1.1
3. Industrial load	5000 KW	0.8	1.2

Overall diversity factor may be taken as 1.4.

- (i) Maximum demand on the system, (ii) Daily energy consumption (total).  
 (iii) Overall load factor, and (iv) Connected load (total) assuming that demand factor for each load is unity.