Code No: RT22024   **R13**   SET - 1

II B. Tech II Semester Supplementary Examinations, November-2017
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 **THREE** Questions from **Part-B**

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PART –A

1.	a)	What is the importance of Super heater in a thermal power plant	(4M)
	b)	Explain the importance of control rods in nuclear reactors	(4M)
	c)	List the advantages of transmitting power over transmission lines on high voltages	(4M)
	d)	Explain the major functions of Sub-Stations	(4M)
	e)	List the various insulating materials used in manufacture of cables	(3M)
	f)	Define the terms Cold reserve and Hot reserve with respect to Power system operation	(3M)

PART -B

2. a) Explain the essential requirements in the design of thermal power station (8M)
   b) Explain the importance of an economizer in a thermal power station with a neat diagram (8M)

3. a) Describe the nuclear chain reaction (8M)
   b) Explain the working of Pressurized Water Reactor(PWR) with a neat diagram (8M)

4. a) Discuss the stepped distribution with neat diagram (6M)
   b) A 2-wire D.C distributor AB is fed from both ends. At the feeding point A the voltage is maintained at 240 V and at B is 245 V. The total length of the distributor is 200 meters and loads are tapped off as under: 25A at 50 meters from A; 50A at 75 meters from A; 30A at 100 meters from A;40A at 150 meters from A. If the resistance per Km of one conductor is 0.3Ω, calculate: i) The currents in the various sections of the distributor ii) The minimum voltage and the point at which it occurs. iii) The power dissipated in the distributor (10M)

5. a) Explain with a neat layout diagram of a double bus bar with Bypass isolator arrangement (8M)
   b) Draw the single line diagram of GIS? Explain. (8M)

6. a) Explain in detail about Capacitance grading and also give their merits and demerits. (8M)
   b) The capacitance between any two conductors of a three-phase, three conductor cable is 2μF. The cable operates at 11KV line voltage and 50 Hz. What is the charging current through the cable capacitance? (8M)

7. a) Explain the terms Fixed, Semi – fixed and Running costs with respect to Costs of Generation (10M)
   b) A generating station has a maximum demand of 550MW. The annual load factor is 45% and the capacity factor is 40 %. Find the reserve capacity of the plant (6M)