

Code No: R22022

**R10**

**SET - 1**

**II B. Tech II Semester Supplementary Examinations, April/May - 2017**

**POWER SYSTEMS - I**

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 75

Answer any **FIVE** Questions  
All Questions carry **Equal** Marks  
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1. Describe the following thermal power station components with necessary diagram (15M)  
a) Economizer b) condenser and c) cooling toners
2. a) Describe the functions of moderation in nuclear power plants? (8M)  
b) Discuss the radiation hazards in nuclear power plants (7M)
3. a) Explain the working of wind energy conversation system with neat block diagram. (8M)  
b) Discuss conventional and non-conventional energy in generation. Give example for each method. (7M)
4. a) Make a comparison between DC and AC systems (5M)  
b) Discuss importance of voltage drop and power loss calculations in distribution system (4M)  
c) Explain the design features of distribution systems (6M)
5. a) Make comparison between indoor and outdoor substations (7M)  
b) Mention types of gas insulated substations and explain any one of them with its single line diagram (8M)
6. a) Derive the expression for calculating the insulation resistance in the cables (7M)  
b) What is the need for grading of cables? Discuss the capacitance grading. (8M)
7. a) Define the terms: Load factor, plant use factor, demand factor and diversity factor (7M)  
b) A generating station has a maximum demand of 80 MW, a load factor of 65%, a plant capacity factor of 40% and a plant use factor of 85%. Find  
(i) Daily energy produced. (ii) Reserve capacity of plant. (iii) Maximum energy that could be produced daily if the plant was running all the time and maximum energy that could be produced daily if the plant was running as per operating schedule (8M)
8. a) Explain (i) Block rate tariff, (ii) Two part tariff, and (iii) Maximum demand tariff (10M)  
b) Explain the factors which influence the rate of tariff. (5M)