**7E4178**

**B.Tech. VII Semester(Main/Back) Examination - 2014**

**Electrical Engineering**

**7EE6.3 Economic Operation of Power Systems**

Time : 3 Hours

Maximum Marks : 80

Min. Passing Marks : 24

**Instructions to Candidates:**

*Attempt any five questions, selecting one question from each unit. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated )*

### Unit - I

1. a) What do you mean by depreciation. How will you calculate the depreciation in power plants (8)

   b) Derive an expression for cost of electrical energy for power plants. Explain how the cost of unit energy generated by a generating unit is estimated (8)

**OR**

1. a) Discuss about the economics in plant selection and explain the economics of different types of generating plants. (8)

   b) Explain the various techniques for power plant cost analysis with suitable examples (8)

### Unit-II

2. Explain the following of thermal power plants:-

   a) Input, output and heat rate characteristics (8)

   b) `penalty factors (8)

**OR**

2. a) What are the sources of transmission losses in power plants and how will overcome these losses (8)

   b) Explain the optimal load allocation for a system having large number of generating units (8)

## Unit-III

3. a) Explain the various base load peak load operation requirements for hydrothermal plants (8)

   b) What do you mean by short term hydro thermal coordination. Explain with suitable examples (8)

### OR

3. Explain the following for Hydro thermal plants

   a) Scheduling methods and applications (8)

   b) Reservoirs of hydro and thermal plants (8)

## Unit-IV

4. a) Explain the synchronizing current and power of Generators. (8)

   b) Discuss about the effect of change in excitation and load sharing effects of alternators. (8)

### OR

4. Explain the following with neat sketches

   a) Synchronizing power and torque of alternators. (8)

   b) Operating limits of alternators (8)

## Unit-V

5. Write short notes on the following

   a) Break even and minimum cost analysis (8)

   b) linear and nonlinear break even (8)

### OR

5. Write short notes on the following

   a) Economics for electrical goods and services (8)

   b) Supply and demand economics (8)

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