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7E7132

Roll No.

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B.Tech. VII - Semester (Main & Back) Examination, Nov. - 2019  
Electrical Engg.

7EE6.3A Economic Operation of Power System

Time : 3 Hours

Maximum Marks : 80

Min. Passing Marks : 26

**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 clearly.*

**UNIT - I**

- Q.1 a) Explain the factors effecting economic generations and distributions, generating cost [8]  
b) Explain the concept of power plant cost analysis and also the factors effecting it. [8]

(OR)

- a) Describe the selection mythology for thermal types of generation and types of equipments employed in it? [8]  
b) Explain Economics of Power Generation and cost of electrical energy? [8]

**UNIT - II**

- Q.2 a) For Economical Operations of Thermal Power Plants explain the Methods of loading turbo generators? [8]  
b) By help of graph explain input, output and heat rate characteristics? [8]

(OR)

- a) For a simple two unit system the loss coefficients are:  
 $B_{11}=0.001\text{MW}^{-1}$  ;  $B_{12}=-0.0005\text{MW}^{-1}$  ;  $B_{22}=0.0024\text{MW}^{-1}$   
The incremental production cost of the two units are:

[Contd....

$$\frac{dc1}{dp1} = 0.08P1 + 16 \quad \text{Rs/MW-hr}$$

$$\frac{dc2}{dp2} = 0.08P2 + 12 \quad \text{Rs/MW-hr}$$

- b) Find the generation P1 and P2 for  $\lambda = 20$ ; also compute the transmission loss and received power. [16]

### UNIT - III

- Q.3 A) Explain the phenomena of cogeneration, with help of a neat and label diagram explain the process of cogeneration of Hydro & Thermal Power Plant with its Advantages and Disadvantages? [8]

- B) Explain the phenomena of short term hydro thermal coordination? [8]

(OR)

- A) For Hydro thermal cogeneration explain base load peak load operation requirement? <http://www.rtuonline.com> [8]

- B) For reservoirs hydro plants and thermal plants explain the combined working of run-off river and steam plant? [8]

### UNIT - IV

- Q.4 A) Explain Parallel Operations of Generators? [8]

- B) Explain Infinite bus bars, active and reactive power control for synchronizing of the generator? [8]

(OR)

- A) During the parallel operation of generator explain effect of change in excitation, load sharing, sharing of load currents? (8)

- B) Explain operating characteristics of cylindrical alternator rotor. (8)

### UNIT - V

- Q.5 With reference to Economics for Electrical Engineers explain the concepts of physical and financial efficiencies of electrical goods and services as well as its effect on supply and demand? [16]

(OR)

(8+8=16)

- Q.5 Write short note on :

- a) min cost analysis  
b) linear and nonlinear break even