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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
THIRD SEMESTER M. TECH DEGREE EXAMINATION
Electrical and Electronics Engineering
(Power Systems)
04EE7405—Power System Economics

Max. Marks: 60   Duration: 3 Hours

PART A
Answer All Questions
Each question carries 3marks

1. Discuss the significance of automatic generation control.
2. Explain the role of aggregators and brokers in energy market.
3. Describe the features of monopsony market.
4. Explain the tap changing phenomenon in transformers. What is its significance?
5. A consumer has a maximum demand of 200 kW at 40% load factor. If the tariff is Rs.100 per kW of maximum demand plus 10 piase per kWh, find the overall cost per kWh.
6. Explain the significance of reactive power requirement of a transformer.
7. Discuss the effect of capacitor on stability enhancement with the help of Equal Area Criteria.
8. Explain the term 'price discrimination' in energy market.

PART B
Each question carries 6 marks

9. Discuss in detail about the electricity market structure and explain each models' role.

OR

10. Outline the importance of Independent system operator.
11. Explain the terms 'Monopoly' and 'Oligopoly' in energy market with necessary explanations.

OR

12. Define the terms 'perfect competition' in energy market and discuss about its features.
13. Discuss how LMP is being influenced by the transmission congestion. Explain with a real case study.

OR

14. Explain a) Unused transmission capacity method b) Counter flow method c) Distribution factor method.

15. Explain the role of FACTS devices in energy market.

OR

16. Discuss the requirement of reactive power under steady state and dynamic voltage stability.
17. The capital cost of a hydro-power station of 50MW capacity is Rs. 1000per kW. The annual depreciation charges are 10% of the capital cost.A royalty of Re 1 per kW per year and Re 0.01 kWh generated is to be paid for using the river water for generation of power .The maximum demand on the power station is 40MW and annual load factor is 60%. Annual cost of Salaries, maintenance charges etc is Rs 7,00,000. If 20% of its expense is also chargeable as fixed charges, calculate the generation cost in two part form.

OR

18. A load having a maximum value of 150MW can be supplied either by a hydro electric station or a steam power plant. The costs are as follows.

Plant	Capital cost per kW installed	Operating cost per kWh	Interest
Steam Plant	Rs 1600	Re 0.06	7%
Hydro Plant	Rs 3000	Re 0.03	7%

Calculate the minimum load factor above which the hydro electric plant will be more economical.

19. Discuss about various tariff features adopted to aid the DSM.

OR

20. Explain a)UPFC b)Thyristor switched capacitor.