

THE USE OF CALCULATOR IS PERMISSIBLE

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Sa2710401 Electricity Market

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1. What are the basic steps of electricity market restructuring? Explain the roles of different market participants in the restructured electricity markets.
2. Picture yourself as an electricity retailer. You operate in a deregulated electricity market. What kind of risks do you need to consider when planning your business operations? How can you hedge your electricity procurement price against the price increases in the electricity wholesale market, for instance, by using the products of power exchange?
3. Explain the objectives of electricity distribution business.
4. Explain briefly the meaning of the following terms:
 - a) regulating power
 - b) electricity derivative
 - c) load model
 - d) open power delivery
 - e) quality of electricity
5. Carry out a balance settlement of a network operator concerning the hour of 17.00-18.00 of a January weekday. The metered hourly powers of the customers of companies A, B and C, and the annual energies of other customers within competition are shown below.

	Company A	Company B	Company C
Metered	700 kW	450 kW	300 kW
Housing, no electric heating	14 GWh	8 GWh	5 GWh
Housing, electric heating	20 GWh	-	6 GWh
Others	9 GWh	10 GWh	5 GWh

For the hour in question, the total power consumption is $P_s = 39$ MW (obtained from summing up the primary substation meterings). No-load losses are 400 kW. Load losses are 3 % of the maximum load of the distribution area ($P_{smax} = 42$ MW). Company A is the so called "local company".

The required energy \rightarrow power conversion indexes of the hour in question are:

Housing, no electric heating	246 W/MWh
Housing, electric heating	179 W/MWh
Others	114 W/MWh