ELEC-E8413 POWER SYSTEMS

EXAM 16.12.2019

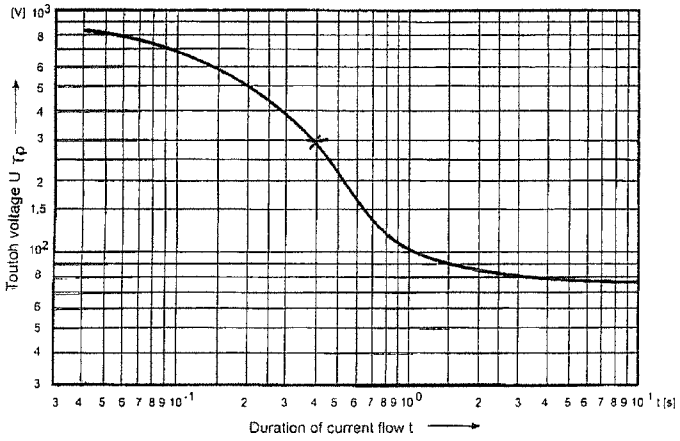
1. Explain the following: a) Load duration curve, b) Load factor, c) Load duration time, d) Diversity factor, and e) Coincidence factor.

2. Explain the use of type users load curves in modelling and forecasting of electrical load. What are the aspects affecting modeling accuracy and modeling error.

3. A power system has kinetic energy of 300 000 MWs. Suppose that a production of 1300 MW is disconnected. What is the rate of frequency change?. What would be the final state frequency if the stiffness of the system is 1000 MW/Hz and there is no power control.

4. The maximum heating of a conductor is 80 degrees, mass 145 kg/km, specific heat capacity 910 Ws/ ^{0}C kg and resistance 0,673 ohm/km. Compute the maximum 1 second short circuit current.

5. Explain the principles of earth fault hazard voltage limitation. The maximum earth fault current in a network is 20 A. If the fault is tripped in 0.4 seconds, how large should the maximum grounding resistance of the protective earthing be a) in base case, b) if potential grading is used?. The allowed touch potential is shown in the figure below.



Answers accepted in English, Finnish and Swedish.

Questions are available only in English.