R09

Code No: C4906, C6406

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH I - SEMESTER EXAMINATIONS, APRIL/MAY-2012
VOLTAGE STABILITY
(COMMON TO ELECTRICAL POWER ENGINEERING, POWER ENGINEERING & ENERGY SYSTEMS)

Time: 3hours **Max. Marks: 60**

Answer any five questions
All questions carry equal marks

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1.a) Explain the mechanism of voltage collapse in power transmission system.
b) Derive the physical relation indicating dependency of voltage on reactive power flow.

2.a) What are the salient disturbances that cause voltage instability?
b) Explain the voltage collapse phenomenon with the help of P-V curves.

3. Discuss the detailed description of voltage collapse phenomenon with the help of Q-V curves.

4.a) How would you take into account the magnitude of the load voltage as an indicator of stability?
b) Explain the analysis of voltage stability of two machine system.

5.a) Derive an expression for determinant of Jacobian as proximity indicator in voltage stability indices
b) Explain how the following loads that influences voltage stability
i) Induction motor
ii) Heat pumps and
iii) OH lines and cables.

6.a) Discuss various sources of generation and absorption of reactive power.
b) Explain the role of OLTC transformer on voltage stability

7. Discuss in detail, enhancement of voltage stability with various types of localized reactive power support.

8. Write short notes on the following
a) Practical aspects to improve voltage stability
b) Static VAR compensation
c) Voltage stability margin.

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