Total No. of Questions : 8] [Total No. of Printed Pages : 2

MEPE - 203

M.E./M.Tech., II Semester

Examination, July 2015

Power Electronics Applications To Power Systems

Time : Three Hours *Maximum Marks : 70*

Note: i) Attempt any five questions.
ii) All questions carry equal marks.
iii) Assume suitable data if missing any.

1. a) Develop an algorithm for formation of bus impedance matrix.

   b) Explain with necessary derivations capability curves of an alternator.

2. a) State different levels of power system security.

   b) Derive an expression for GSDF. What is its significance?

3. a) Specify the application of Z bus and Y bus matrix.

   b) Differentiate between voltage stability and angle stability.

4. a) Suggest different voltage stability indices based on bus and line. Explain how they are used in determining the maximum loadability point.

   b) What are the contingencies occurring in power system? Discuss in detail the contingency analysis of power system.

5. a) Develop a model for long transmission line.

   b) Explain with diagram how TCSC

      i) Can enhance power flow

      ii) Mitigate SSR

      iii) Improve transient stability

6. a) Explain power transmission control using Unified Power Flow Controller (UPFC).

   b) State benefits and application of FACTS devices.

7. a) Draw and explain control scheme of FC-TCR and state its function.

   b) Describe the configuration and working principle of STATCOM.

8. Write short notes on any two

   a) OLTC

   b) Shunt and series compensation

   c) PV curve

   d) Reduced load flow Jacobian

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