MEPE–203

M. E./M. Tech. (Second Semester) EXAMINATION, June, 2012

(Grading/Non-Grading)

POWER ELECTRONICS APPLICATIONS TO POWER SYSTEM

(MEPE – 203)

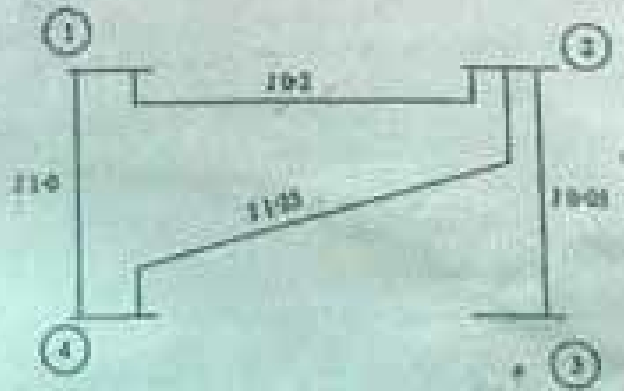
Time : Three Hours

Maximum Marks : { *GS : 70* / *NGS : 100*

Note : Attempt any *five* questions. All questions carry equal marks.

1. (a) Describe the algorithm for formation bus impedance matrix for addition of a branch.

   (b) Obtain the bus impedance matrix by the step by step method. A three bus system having reference node (4), has line impedances in per unit as shown in Fig.



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2. (a) Why is reactive power transmission necessary ? What are the difficulties faced during the transmission of reactive power ?

   (b) What do you understand by regulated shunt compensation ?

3. (a) Explain security in relation to power system operation.

   (b) What is contingency evaluation in connection with power system security ?

4. (a) Explain the generation shift distribution factors, line outage distribution factors and compensated shift factors.

   (b) What is static compensator ? Explain with diagrams working principle of various types of static compensator.

5. (a) Explain voltage stability and explain the factors affecting voltage instability and collapse.

   (b) Explain the comparison of angle and voltage stability in brief.

6. (a) What do you understand by FACTS, classify and explain the different FACT controller in short.

   (b) Explain the role of unified power controller for the FACT system.

7. Explain in brief the role of TCSC with its working principle and different mode of operation and its advantages.

8. Write short notes on any *three* of the following :

   (a) Economic Dispatch
   (b) Phase shifting transformer
   (c) Decoupled load flow
   (d) Load ability of the transmission line
   (e) PV curve