B. E. (Seventh Semester) EXAMINATION, Dec, 2010 (New Scheme) (Electrical & Electronics Engg. Branch)
COMPUTER APPLICATIONS TO POWER SYSTEMS *Time: Three Hours Maximum Marks : 100 Minimum Pass Marks : 35*

Note : Attempt all questions.

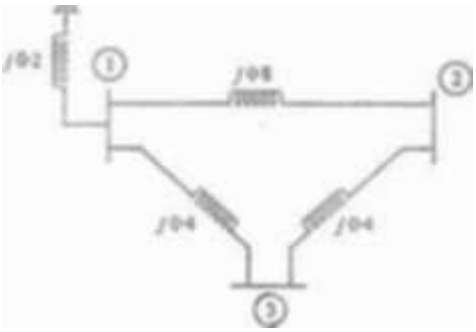
I. Answer any *two* parts of the following : 10 each

(a) Develop mathematical model of an OLTC.

(b) Explain capability curves of alternator.

(c) Derive an expression for normalised transmission line loading.

(d) Construct Bus impedance matrix for a 3 bus system as shown below. All the impedances are given in per unit.



2. Answer any *two* parts of the following : 10 each

(a) Explain various methods of load bus voltage control.

(b) Explain the effect of uniformly distributed fixed series and shunt compensation on transmission line loadability.

(c) Give a comparative summary of alternate forms of compensation.

(d ) Specify the following :

(i) SVC

(ii) SVS

3. Answer any *two* pans of the following : 10 each

(a) Establish a general sensitivity relations applicable in power system operation.

(b) Derive the following sensitivity factors :

(i) GSDF (ii) LODF

(c) Explain with the help of necessary derivation the load bus voltage changes in terms of P-V bus voltage changes.

(d) Explain V-Q sensitivity.

4. Answer any *two* parts of the following : 10 each

(a) Define power system security. Explain security level with the help of flowchart.

(b) Specify the following :

(i) Contingency analysis (ii) Contingency ranking

(c) Explain the meaning of pre-contingency and post-contingency corrective rescheduling.

(d) Develop necessary condition for Security Constrained Economic Dispatch (SCED). Suggest any method for its solution.

5. Answer any *two* parts of the following :

(a) Explain 'Voltage stability'. How is it different than Angle stability' ? 10

(b) How P-V curve is used for voltage stability assessment ? Explain. 10

(c) Enlist the various methods for voltage stability enhancement. 10

(d) Develop any proximity index forvoltage stability assessment. 10