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

Roll No ....

EX/EE-7003 (CBGS)
B.E. VII Semester
Examination, November 2018
Choice Based Grading System (CBGS)
Computer Application to Power System
Time : Three Hours

Maximum Marks : 70

Note: i)   Attempt any five questions.
ii) Each question carry equal marks.
iii) Assume missing data suitably, if any

1. a) Enlist various power system components. Discuss any one network model study using graph theory. Take suitable example.
    b) A 3 bus power system is shown in figure 1.
        Where $Z_2 = j\,0.2$, $Z_5 = j\,0.4$, $Z_8 = j\,0.2$
        $Y_1 = Y_3 = j\,0.01$, $Y_4 = Y_6 = j\,0.05$, $Y_7 = Y_9 = j\,0.03$.
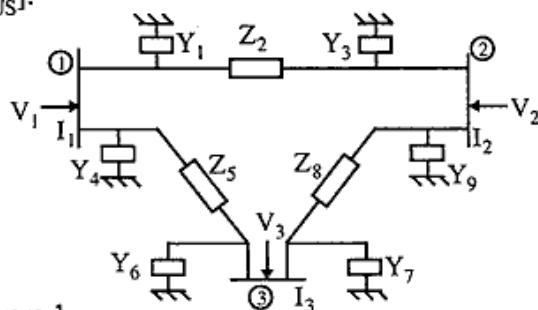   Find $[Y_{BUS}]$.

Figure 1

2. a) What components of power system absorber generate reactive power? How they can be quantized?
    b) Discuss the method of voltage control in transmission system utilizing OLTC transformer.

3. a) Discuss various sensitivity analysis techniques. Derive general sensitivity relations of n-bus power system.
    b) Explain the terms: generation shift distribution factor, line outage distribution factor and compensated shift factor in sensitivity.

4. a) Explain "Power system security" concept. Enlist various security function and security level.
    b) Discuss the method of economic dispatch using LP formulation.

5. a) Explain the concept of voltage stability. Differentiate between voltage and angle stability.
    b) Discuss the effect of series and shunt compensation on voltage stability.

6. a) Describe the model analysis using reduced Jacobian in voltage stability.
    b) Differentiate pre-contingency and post-contingency analysis.

7. a) Find the following for a single - circuit transmission line delivering a load of 45 MVA at 132 kV and p.f. 0.8 lagging.
        i)   Sending end voltage
        ii)   Sending end current
        iii) Sending end power
        iv)   Transmission efficiency
    b) Define "line loadability". Draw capability curves of alternator.

8. Write short notes on
    a) Regulating transformer
    b) Effect of load models

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