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BIEE-022

B.Tech. IN ELECTRICAL ENGINEERING

Term-End Examination

June, 2013

BIEE-022 : POWER SYSTEM

Time : 3 hours *Maximum Marks : 70*

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

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1. (a) What do you understand by per unit system ? State the advantage of per unit system. 6

(b) What do you understand by a short - circuit ? Discuss the possible causes of short circuit in power system. 8

2. An unloaded synchronous generator, whose neutral is grounded through a reactance x_n, has balanced emfs and sequence reactance x_1, x_2 and x_0 such that $x_1 = x_2 > x_0$ 14

(a) Draw the sequence networks of the generator as seen from the terminals.

(b) Derive expression for fault current for a solid line to ground fault on phase a.

(c) Show that, if the neutral grounded solidly, the LG fault current would be more than that of three - phase fault current.

3. (a) What is idea behind performing load flow analysis of any given power system ? 6

(b) Discuss the procedure for representing a tap changing transformer in the formation of system matrix $[Y_{Bus}]$ for load flow study. 8

4. (a) Deduce the condition of equal area criterion for transient stability analysis. 6

(b) Explain the point by point solution technique of swing equation for transient stability study. 8

5. (a) Discuss the behaviour of a travelling wave when it reaches : 8

(i) Short circuited end of transmission line

(ii) Line terminated with an inductance.

(b) What are the factors that affects transient stability ? Explain in detail. 6

6. Explain in detail load flow solution for power system using : 14

(a) Gauss siedel method

(b) Approximation to N-R method

7. Write short notes on *any two* of the following : **2x7=14**

(a) Wave equation for uniform transmission line.

(b) Factors affecting steady state and transient stability.

(c) Formation of Zbus using singular transformation and algorithm