Roll No ....

EE-6004 (CBGS)

B.E. VI Semester

Examination, May 2019

Choice Based Grading System (CBGS)

Power System - II

Time : Three Hours

Maximum Marks : 70

Note: i) Attempt any five questions.

ii) All questions carry equal marks.

1. a) What are the problems associated with modern inter connected power system?   7

   b) Explain pricing of energy and transmission services.   7

2. a) Form Y_{bus} for the 4 bus system if the line series impedance are as follows: 7

Line (bus to bus)	Impedance
1-2	0.12 + j0.3 p.u
1-3	0.1 + j0.4 p.u
2-3	0.18 + j0.6 p.u
2-4	0.05 + j0.2 p.u
3-4	0.05 + j0.2 p.u

   Neglect the shunt capacitance of line.

   b) Explain Gauss-Seidel method for load flow studies.   7

3. a) Derive the expression for steady state frequency change for single area system with following cases: 7

   i) Changes in load with fixed speed

   ii) Changes in speed with fixed demand

   b) For a two identical area system the following data is given. Determine the frequency of oscillations when a step load disturbance occurs   7

   Speed regulation coefficient = 4 Hz/pu mw
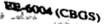
   Damping coefficient = 0.03pu mw/Hz

   System frequency = 50Hz

   The tie line has capacity of 0.1 per.

   The power angle is 30° just before the occurrence of the load disturbance. http://www.rgpvonline.com

4. a) Explain the different methods of voltage control in Transmission line.   7

   b) Discuss in detail about generation and absorption of reactive power in power system components.   7

5. a) Distinguish between rotor angle stability and voltage stability.   7

   b) Derive swing equation. Discuss its applications.   7

6. a) Draw a general block diagram of voltage regulator and explain the function of each block.   7

b) Draw the circuit for a typical excitation system and derive the transfer function model.   7

7. a) Explain why it is necessary for keeping strict limits on the system frequency variations.   7

b) Determine the K.E stored by 50 MVA, 50Hz 2 pole alternator with an inertia constant 5kW-sec/kVA. If the machine is running steady at synchronous speed with a shaft input of 65000 H.P When electrical power developed suddenly changes from its normal value to a value of 40MW. Determine the acceleration or de acceleration of the rotor.   7

8. Short notes (any two)   2×7=14

i) Economic dispatch

ii) Power system restructuring

iii) Compare load flow methods

iv) Use of Y_{bus} and Z_{bus}

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