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Roll No ....

EX-701 (GS)

B.E. VII Semester

Examination, December 2017

Grading System (GS)

Power System - II

Time : Three Hours

Maximum Marks : 70

Note: i)   Attempt any five questions.

ii)   All questions carry equal marks.

1. a) Why the interconnected power system is necessary? Explain the problems associated with them.   7

   b) What is deregulation in power system? Explain its effect and how it can be overcome.   7

2. a) Give the comparison of different load flow analysis methods.   7

   b) The following is the system data for a load flow solution:

   The line admittances

Bus code	Admittances
1 - 2	– j 5.0
1 - 3	– j 5.0
1 - 4	– j 5.0
2 - 3	– j 10.0
3 - 4	– j 10.0

The schedule of active and reactive powers.

Bus code	P	Q	V	Remarks
1	-	-	1+j0.0	Slack bus
2	1	0.1	-	PQ Bus
3	3.5	0.3	-	PQ Bus
4	1	0.2	-	PQ Bus

Find the voltages at the end of first iteration using Gauss-Seidel method.   7

3. a) Why load frequency is necessary? Explain types of frequency regulation with proper example.   7

   b) Give the block diagram of load frequency control with proper explanation.   7

4. a) Explain with the help of block diagram automatic voltage regulator of turbo generators.   7

   b) What is the need of excitation system? Explain A.C. static excitation system.   7

5. a) What is equal area criteria? Explain.   6

   b) A 50 Hz generator is delivering 50% of the power that it is capable of delivering through a transmission line to an infinite bus. A fault occurs that increases the reactance between the generator and the infinite bus to 500% of the value before the fault. When the fault is isolated the maximum power that can be delivered is 75% of the original maximum value. Determine the critical clearing angle.   8

EX-701 (GS)   Contd....

6. a) Differentiate between steady state stability and transient stability of a power system. Also discuss the factors affecting them.   7

   b) Determine the K.E. stored by 50MVA, 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

7. a) Two generating stations A and B have full load capacity of 210MW and 75 MW respectively. The inter connector connecting the two stations has an induction motor/ synchronous generator (plant C) of full load capacity 30 MW. The percentage change of speed of A, B, C are 5, 4 and 3 respectively. The loads on bus bars A and B are 75 MW and 30 MW respectively. Determine the load taken by the set C and indicate the direction in which the energy is flowing.   7

   b) Explain automatic tie line load bias control.   7

8. Short Notes (Any two) :   7×2=14

   a) Economic dispatch

   b) Synchronous phase modifier

   c) Methods of improving transient stability

   d) Pricing of energy.

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