

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (OLD) EXAMINATION – WINTER 2018****Subject Code: 170901****Date: 03/12/2018****Subject Name: Inter Connected Power System****Time: 10:30 AM TO 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Explain the advantages and disadvantages of inter connected power system. **07**
(b) Give the comparisons between NR-Method & G-S Method. **07**
- Q.2** (a) Explain the classification of bus. How slack bus is decided for Load flow study? **07**
(b) Derive the equation for β coefficient. **07**
- OR**
- (b) Derive the static load flow equations. **07**
- Q.3** (a) Explain the Y-bus formation using singular transformation method. **07**
(b) Explain Islanding and describe the importance during black-out. **07**
- OR**
- Q.3** (a) Explain methods used for voltage control. **07**
(b) Explain the speed governing system with neat diagram. **07**
- Q.4** (a) Explain clearly with a flow chart of computational procedure for load flow study by G-S Method. **07**
(b) A two pole, 50 Hz, 11kV turbo generator has a rating of 100MW, power factor 0.85 lagging. The rotor has a moment of inertial of 10,000kg-m². Calculate H and M. **07**
- OR**
- Q.4** (a) Discuss in brief the methods for improving transient stability **07**
(b) Two generators rated 200 MW and 400 MW are operating in parallel. The droop characteristics of their governors are 4% and 5% respectively from no load to full load. The speed changers are so set that the generators operate at 50 Hz sharing the full load of 600 MW in the ratio of their ratings. If the load reduces to 400 MW how will it be shared among the generators and what will the systems frequency be? Assume free governor operation. **07**
- Q.5** (a) Explain tie-line load bias method of frequency control **07**
(b) Prove that $M d^2 \delta / dt^2 = P_m - P_e$, P_m is mechanical power, P_e is electromagnetic power and M is angular momentum **07**
- OR**
- Q.5** (a) Discuss procedure for solving the swing equation using point by point method. **07**
(b) Describe unit commitment in detail. **07**
