

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2018

Subject Code: 2170901

Date: 26/11/2018

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) What is the importance of interconnected power system? **03**
 - (b) Explain Cascade Tripping. **04**
 - (c) Discuss Zbus building algorithm. Explain all types of modifications when transmission lines are added between the buses. **07**

- Q.2**
- (a) Give reasons: Bus admittance matrix is a sparse Matrix. **03**
 - (b) Explain the following. **04**
 - 1) Bus Incidence matrix
 - 2) Primitive network
 - (c) The fuel cost of two unit plants are given by **07**
 $C_1 = 100 + 2P_1 + 0.005 P_1^2$
 $C_2 = 200 + 2P_2 + 0.01 P_2^2$ where P_1 and P_2 in MW. The plant supplies a load of 450 MW. Find economic load scheduling of two unit and find incremental fuel cost, neglecting losses.

OR

- (c) A constant load of 300 MW is supplied by two 200 MW generators 1 and 2, for which the respective incremental fuel cost are **07**
 $dC_1/dP_{G1} = 0.1 P_{G1} + 20$
 $dC_2/dP_{G2} = 0.12 P_{G2} + 15$
With Power P_G in MW and cost C in Rs/hr. Determine
 - 1) The most economical division of the load between the generators and
 - 2) The saving in Rs/day thereby obtained compared to equal sharing between the machines.

- Q.3**
- (a) Explain Properties of Y- bus matrix. **03**
 - (b) Write a Short Note on Unit Commitment. **04**
 - (c) State the assumptions made for load flow studies and applications of load flow studies. **07**

OR

- Q.3**
- (a) Explain the main features of Load Dispatch centre. **03**
 - (b) Define following : **04**
 - 1) Steady-state stability
 - 2) Transient stability
 - (c) Explain GS method with the help of flowchart. **07**
- Q.4**
- (a) What is critical clearing angle? **03**

	(b)	Explain Incremental fuel cost and penalty factor with its equation.	04
	(c)	State the methods of Load frequency control and explain bias tie line frequency control.	07
	OR		
Q.4	(a)	What is primitive network?	03
	(b)	Draw the block diagram of AGC.	04
	(c)	Describe the methods of voltage control adopted for large size power system in detail.	07
Q.5	(a)	What are the advantages of FDLF method over NR method?	03
	(b)	Explain Power angle curve.	04
	(c)	A 100 MVA, 2 pole, 60 Hz generator has a moment of inertia 50×10^3 kg. m ³ . 1) What is energy stored in the rotor at rated speed? 2) What is the corresponding angular momentum? 3) Determine the inertia constant H.	07
	OR		
Q.5	(a)	Classify various types of buses in power system for load flow analysis.	03
	(b)	Explain Equal area criteria of stability.	04
	(c)	Discuss in brief the methods for improving transient stability.	07
