Seat No: _____ **Enrollment No: _____**

PARUL UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

M.Tech., Summer 2018-19 Examination

Semester: 2 **Date: 08/05/2019**
Subject Code: 203207153 **Time: 10:30 am to 01:00 pm**
Subject Name: Power System Dynamics-2 **Total Marks: 60**

Instructions:
1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 A) Demonstrate the importance of small signal stability. **(05)**
B) With help of diagram explain working of turbine speed governing system **(05)**
C) Analysis the different Eigen value trajectory behavior around singular point applicable to two dimensional case **(05)**

Q.2 **Answer the following questions**. (Attempt any three) (Each five mark) **(15)**
A) Classify the power system stability
B) Illustrate the sub-synchronous resonance & also discuss the effect of SSR in power system
C) Discuss the RI frame in Multi-Machine system
D) According to CIGRE, Define Voltage instability & voltage collapse.

Q.3 A) Model of speed governing system of hydro turbine related to change in speed & frequency **(07)**
B) Analyze effect of excitation system in reference to change in terminal voltage **(08)**

OR

B) Examine the block diagram power system stabilizer. **(08)**

Q.4 A) Analyze the effect of AVR on synchronizing and damping torque **(07)**

OR

A) Examine the reverse action of OLTC on Voltage collapse **(07)**
B) Show the expression for system state matrix in PSS. **(08)**

$$\begin{bmatrix} \Delta\dot{\omega}_r \\ \Delta\dot{\delta} \\ \Delta\dot{\psi}_{fd} \\ \Delta\dot{v}_1 \\ \Delta\dot{v}_2 \\ \Delta\dot{v}_s \end{bmatrix} = \begin{bmatrix} a_{11} & a_{12} & a_{13} & 0 & 0 & 0 \\ a_{21} & 0 & 0 & 0 & 0 & 0 \\ 0 & a_{32} & a_{33} & a_{34} & 0 & a_{36} \\ 0 & a_{42} & a_{43} & a_{44} & 0 & 0 \\ a_{51} & a_{52} & a_{53} & 0 & a_{55} & 0 \\ a_{61} & a_{62} & a_{63} & 0 & a_{65} & a_{66} \end{bmatrix} \begin{bmatrix} \Delta\omega_r \\ \Delta\delta \\ \Delta\psi_{fd} \\ \Delta v_1 \\ \Delta v_2 \\ \Delta v_s \end{bmatrix}$$