Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER- VII EXAMINATION-SUMMER 2023

Subject Code: 3170915 Date: 30/06/2023

Subject Name: Power System Dynamics and Control

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.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	Define power system stabilizer.	**03**
	(b)	Explain in the types of load models used in power system	**04**
	(c)	Mention the transformation matrix used and corresponding assumptions for Park's transformation. Describe the significance of Park's transformation.	**07**
Q.2	**(a)**	Draw the systematic diagram for 3-phase synchronous machine.	**03**
	(b)	Explain three- Damper wiring model with figure.	**04**
	(c)	Give a classification of load models used in power system analysis. Briefly explain any one load model in detail.	**07**
		OR	
	(c)	Draw general functional block diagram of an excitation control system andexplain the function of each block.	**07**
Q.3	**(a)**	What is meant by speed governing system?	**03**
	(b)	State basic assumptions made in steady state analysis of an alternator	**04**
	(c)	Briefly describe the phenomenon of Sub-Synchronous Resonance. Describeany two techniques for SSR mitigation.	**07**
		OR	
Q.3	**(a)**	Briefly explain the procedure of small signal analysis	**03**
	(b)	Define the Classification of stability and Explain any one in details.	**04**
	(c)	What is voltage stability? Explain with neat diagrams.	**07**
Q.4	**(a)**	Explain classification of Bracking.	**03**
	(b)	Using Part transformation derive voltage equation of synchronous machine.	**04**
	(c)	Explain transmission line modeling by D-Q transformation using α-β variables.	**07**
		OR	
Q.4	**(a)**	Explain excitation system.	**03**
	(b)	Explain three- Damper wiring model with figure.	**04**
	(c)	Briefly explain : Discrete Control of HVDC Links.	**07**
Q.5	**(a)**	Explain application of Model 1.1.	**03**
	(b)	Why load is consider as a constant impedance model?	**04**
	(c)	Compare voltage and angle stability. How to carry out integrated analysis of the same.	**07**
		OR	
Q.5	**(a)**	Explain classification of Bracking.	**03**
	(b)	Explain any one method for analysis of voltage instability.	**04**

(c) Briefly explain: Dynamic Braking. **07**

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