Time : 3 Hrs **Max Marks:-80**

Note:

1. **Question No.1 is compulsory.**
2. **Attempt ANY THREE questions from the remaining.**
3. **Assume suitable data if required. Justify your assumptions.**

Q.1	**a)**	Explain concept of voltage stability	**5M**
	b)	Explain why the simplification is essential for large scale studies	**5M**
	c)	Explain the importance of Eigen value sensitivity and participation factor.	**5M**
	d)	Explain how armature current limits the reactive capability of synchronous generator	**5 M**
Q.2	**a)**	Explain the classical flux linkages model of a synchronous generator in detail.	**10M**
	b)	Explain briefly factors influencing transient stability of synchronous machines	**10M**
Q.3	**a)**	Explain voltage stability and voltage collapse in details.	**10M**
	b)	Explain how the analysis of unbalanced fault is carried out.	**10M**
Q.4	**a)**	Briefly describe park's transformation and its significance in power system modeling.	**10M**
	b)	What is power system Stabilizer (PSS)? Explain with neat diagram.	**10M**
Q.5	**a)**	Explain stability of a dynamic system in detail. Classify and explain stability based on the region of state space.	**10M**
	b)	Draw general functional block diagram an excitation control system and explain the function of each block.	**10M**
Q.6	**a)**	Elaborate on the co-relation of eigen values and stability	**10M**
	b)	Explain the midpoint effect of excitation system on small signal stability.	**10M**

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