Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME SEMESTER II EXAMINATION – SUMMER 2017

Subject Code: 2720720 **Date: 30/05/2017**

Subject Name: Power System Transients

Time:02:30 PM to 05:00 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)**	List out the sources of transients. Explain how transients affect the power system?	**07**
	(b)	Explain transient response of system with series and shunt lumped parameters and distributed lines.	**07**
Q.2	**(a)**	With suitable example give steps involved in the construction of Bewelly's lattice diagram.	**07**
	(b)	What do you mean by the terms reflection and refraction? Derive the equations for reflection and refraction co-efficient.	**07**
		OR	
	(b)	With neat diagram, wave forms and necessary equations, explain double frequency transient in a power system	**07**
Q.3	**(a)**	Explain lightning discharge mechanism with necessary diagrams. Also explain briefly the effect of tower footing resistance on lightning discharge.	**07**
	(b)	Explain the load switching and capacitor switching transients.	**07**
		OR	
Q.3	**(a)**	Develop the electromagnet model for lightning discharge without shield wires in detail.	**07**
	(b)	Explain the development stages of lighting flash with neat sketch.	**07**
Q.4	**(a)**	Digital computation is required to analyze power system transients – Justify.	**07**
	(b)	Write short note on EMPT for transient computation.	**07**
		OR	
Q.4	**(a)**	Outline the concept of EMPT.	**07**
	(b)	Write short note on hybrid program.	**07**
Q.5	**(a)**	What is meant by insulation coordination? How are the protective devices chosen for optimal insulation in a power system?	**07**
	(b)	Explain the importance of switching overvoltage in EHV power systems. How is protection against overvoltage achieved?	**07**
		OR	
Q.5	**(a)**	Write short note on ground wire for the protection of overhead lines.	**07**
	(b)	With suitable illustration, explain how insulation level is chosen for various equipment in a 230/132 kV substation.	**07**

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