Reg. No. : | | | | | | | | | | |

Question Paper Code: 49309

B.E./B.Tech. DEGREE EXAMINATION, APRIL 2018

Elective

Electrical and Electronics Engineering

14UEE909 – POWER SYSTEM TRANSIENTS

(Regulation 2014)

Duration: Three hours Maximum: 100 Marks

PART A - (10 x 1 = 10 Marks)

1. The transient response occurs CO1-R

   (a) resistive circuits (b) inductive circuit

   (c) capacitive circuit (d) both inductive and capacitive

2. Externally generated transients include CO1-R

   (a) Lightning (b) Power supplies (c) Electronic ballasts (d) Inverters

3. The transients which occur due to trapping of energy and its release somewhere is called CO2-R

   (a) Normal transient (b) Abnormal transient

   (c) Switching transient (d) Double frequency transient

4. When the multiple restriking occurs, possibility of voltage developed across the switch is_____ CO2-R

   (a) 1 p.u (b) 2 p.u (c) 3 p.u (d) 4 p.u

5. The time duration of a dart leader in a lightning stroke is CO3-R

   (a) 1 ms (b) 40 ms (c) 10 ms (d) 20 ms

6. Protection against lightning in HV lines requires the tower footing resistance in the order of CO3-R

(a) 5 ohms (b) 10 ohms (c) 15 ohms (d) 20 ohms

7. Surge impedance of a line is also called as CO4-R

(a) natural impedance (b) load frequency impedance

(c) base impedance (d) none of these

8. The propogation of travelling waves along the transmission line has the effect of CO4-R

(a) attenuation (b) increase in magnitude

(c) distortion (d) both attenuation and distortion

9. Transmission coefficient is defined as the ratio of CO5-R

(a) incident wave to transmitted wave (b) transmitted wave wave to incident wave

(c) incident wave to reflected wave (d) reflected wave to transmitted wave

10. The condition which causes over frequency is CO5-R

(a) line dropping (b) load rejection (c) switching (d) transients

PART – B (5 x 2= 10Marks)

11. Classify transients based on its frequency CO1-R

12. Define current choppping CO2-R

13. Mention the significance of tower footing resistance. CO3-R

14. Define crest and front of travelling wave. CO4-R

15. What is meant by kilometric fault? CO5-R

PART – C (5 x 16= 80Marks)

16.	(a)	Briefly explain the concept of double frequency transients in power system.	CO1- U	(16)
		Or		
	(b)	Discuss the significance of study of transients in system planning.	CO1- U	(16)
17.	(a)	Write short notes on (i) Ferro resonance (ii) Current chopping	CO2- U	(16)
		Or		
	(b)	With necessary waveforms explain with a restrike, with multiple restrikes capacitive switching.	CO2- U	(16)
18.	(a)	Investigate the mechanism of lightning phenomenon and also interpret about the stepped leader.	CO3-Ana	(16)
		Or		
	(b)	With a neat diagram explain the protection offered by ground wires.	CO3- Ana	(16)
19.	(a)	Obtain the transient response of systems with series and shunt lumped parameters and distributed line.	CO4- App	(16)
		Or		
	(b)	Derive the reflection and refraction coefficient of a travelling wave with necessary diagrams.	CO4- App	(16)
20.	(a)	Explain with A flow chart the computation of transients in power systems using EMTP.	CO5- U	(16)
		Or		
	(b)	(i) Explain the causes of transients on closing and reclosing of transmission line.	CO5- U	(8)
		(ii) Discuss in detail about line dropping and load rejection in integrated power system.	CO5- U	(8)