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Question Paper Code: 49309

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

Elective

Electrical and Electronics Engineering

14UEE909 – POWER SYSTEM TRANSIENTS

(Regulation 2014)

Duration: One hour

Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. The over-voltage surges in power systems may be caused by CO1-R
(a) lightning (b) switching
(c) resonance (d) any of the above.
2. Externally generated transients include CO1-R
(a) Lightning (b) Power supplies (c) Electronic ballasts (d) Inverters
3. Switching overvoltage in power system networks are of the order of CO2-R
(a) 1.5 p.u. (b) 2.5 to 3.5 p.u.
(c) 1.0 p.u. or more (d) 2 p.u
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. A 10 km long transmission cable has total inductance of $100\mu H$ and capacitance of $0.25\mu F$. Find out the characteristics impedance (ohm) of the cable. CO4-R
(a) 20 (b) 0.05 (c) 400 (d) 40

8. The propagation 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. Most suitable numeric method to solve electrostatic field problems is CO5-R
- (a) Laplace Equation Method (b) Charge simulation method
(c) Finite difference method (d) Resistance Analog method
10. The condition which causes over frequency is CO5-R
- (a) line dropping (b) load rejection (c) switching (d) transients

PART – B (3 x 8 = 24 Marks)

(Answer any three of the following questions)

11. Discuss the significance of study of transients in system planning. CO1- U (8)
12. With necessary waveforms explain with a restrike, with multiple restrikes capacitive switching. CO2- U (8)
13. With a neat diagram explain the protection offered by ground wires. CO3-U (8)
14. Derive the reflection and refraction coefficient of a travelling wave with necessary diagrams. CO4- App (8)
15. Explain the causes of transients on closing and reclosing of transmission line. CO5- U (8)