R09

Code No: C4905, C0709, C6405

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.Tech I - Semester Examinations, March/April - 2011
HIGH VOLTAGE ENGINEERING AND INSULATION CO-ORDINATION
(COMMON TO ELECTRICAL POWER ENGINEERING, ELECTRICAL POWER SYSTEMS, POWER ENGINEERING AND ENERGY SYSTEMS)

Time: 3hours **Max. Marks: 60**

Answer any five questions
All questions carry equal marks

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1.a) Derive the Townsend's current growth equation by considering the primary and secondary ionization process.
b) Explain the streamer theory breakdown in gases. [6+6]

2. Explain briefly various theories of breakdown in liquid dielectrics. [12]

3.a) Explain with neat diagram the principle of operation, application and limitations of Vande Graff generator.
b) An impulse current generator has total capacitance of 15μF, the charging voltage 125 kv, the circuit inductance 2mH and the dynamic resistance 1ohm. Determine the peak current and wave shape of the wave. [6+6]

4.a) Discuss various methods of measuring high impulse currents.
b) Explain with neat diagram the principle of operation of an electrostatic voltmeter. [6+6]

5. Explain different electrical tests to be carried out on
i) Bushings and
ii) Surge diverters. [12]

6. What are the different methods employed for lightning protection of overhead lines? [12]

7. Explain the different aspects of insulation design and insulation co-ordination adopted for EHV system. [12]

8.a) Compare GIS with Air Insulated Substations.
b) Describe the various components in GIS. [6+6]

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