R09

Code No: C5604

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH I SEMESTER EXAMINATIONS, APRIL/MAY 2012
HIGH VOLTAGE ENGINEERING
(POWER SYSTEMS (HIGH VOLTAGE))

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

Answer any five questions
All questions carry equal marks
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1. Discuss different numerical methods available for estimation of electric field distribution in dielectric media.

2. (a) What is a Tesla coil? How the damped high frequency oscillations are obtained from a Tesla coil?
   (b) Draw the equivalent circuit of a four-stage cascaded transformer and determine the expression for the short-circuit reactance of the transformer

3. Discuss the different methods of measuring high DC voltages. What are the limitations of each method?

4. (a) Draw a typical impulse current generator circuit and explain its operation and application.
   (b) A 12-Stage impulse generator has capacitors each rated at 0.3 µF, 150 kV. The capacitance of the test specimen is 400 pF. Find the wave front and wave tail Resistances to produce a 1.2/50µs impulse wave. Also determine the maximum output voltage if the charging voltage is 125 kV

5. What is capacitance voltage transformer? Explain with phasor diagram how a tuned capacitance voltage transformer can be used for voltage measurements in power systems.

6. Explain how a sphere gap can be used to measure the peak value of voltages. What are the parameters and factors that influence such voltage measurement?

7. Explain different methods of impulse current measurements with relative merits and demerits.

8. Explain different potential divider circuits for impulse voltage measurements.

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