

F 9295

(Pages : 4)

Reg. No.....¹².....

Name.....

B.TECH. DEGREE EXAMINATION, NOVEMBER 2011

Third Semester

Branch : Electrical and Electronics Engineering
EE 010 303—ELECTRIC CIRCUIT THEORY (EE)
(Regular)

Time : Three Hours

Maximum : 100 Marks

Part A

*Answer all questions briefly.
Each question carries 3 marks.*

1. Explain the necessary conditions to be satisfied by the driving point impedance function.
2. Show that the variation of current in a series RC circuit for a d.c. excitation is exponential.
3. Define : Graph, tree and tie set.
4. Explain dot convention in coupled circuits.
5. Three impedances z_1 , z_2 and z_3 are connected in delta. From basics, obtain the Y equivalent.
(5 × 3 = 15 marks)

Part B

Answer all questions. Each question carries 5 marks.

6. Show that a voltage source with an internal resistance R_{in} can be replaced by an equivalent current source and the power delivered to an external resistance in either case is the same.
7. A circuit of resistance 20Ω and inductance 0.2 H in series has a direct voltage of 250 V suddenly applied to it. Find the voltage drop across the inductor at the instant of switching on and at 0.01 sec later.
8. Define Cut-set and basic cut-set. If e is the number of elements and n -the nodes, how many trees will be there in the graph ?
9. Two similar coupled coils of resistance 5Ω and self inductance 1 H are in series. This is in series with a $100 \mu\text{F}$ capacitor. A 220 V , 50 Hz source energises the circuit. Draw the circuit, place the dot markings and calculate the coupling coefficient so that the circuit behaves like a pure resistor.
10. Taking V_{BC} as reference, show all the line and phase voltages for ABC and CBA sequences in a 3-phase circuit.
(5 × 5 = 25 marks)

Turn over