C 31721 (Pages : 2) Name.....

Reg. No.....

COMBINED FIRST AND SECOND SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, JUNE 2007

CS 04 109—BASIC ELECTRICAL ENGINEERING

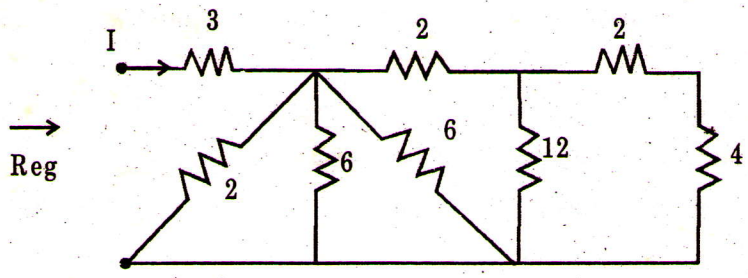
(2004 admissions)

[Common for CS, IT, PT)

Time : Three Hours Maximum : 100 Marks

Answer **all** *questions.*

I. (a) Determine Reg for the following circuit diagram :



All resistances are in ohms.

(b) Obtain the equation for the current through any resistance, in a parallel circuit having n number of different resistances.

(c) Compare the parameters of series and parallel resonances.

(d) State and prove initial and final value theorems of Laplace transform.

(e) Explain the different types of transformer.

(f) Explain the following :—

(i) Cooling in autotransformer.

(ii) Voltage regulation of transformer.

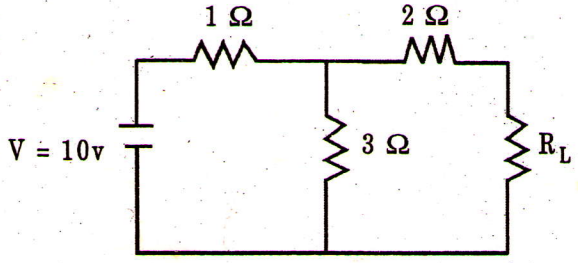
(g) Explain the construction of squirrel Cage induction motor.

(h) Explain the principle of O-meter with a neat diagram.

(8 × 5 = 40 marks)

II. (a) (i) What are voltage and current sources ? Explain with examples. (7 marks)

(ii) State and derive Thevenin's theorem. Apply Thevinin's theorem to the circuit diagram shown.



(8 marks)

Or

Turn over

(b) (i) What are transients ? Explain. Obtain the response of RL transients. (7 marks)

(ii) Explain duality of networks with examples. (8 marks)

III. (a) (i) Obtain average value and peak value, peak factor and form factor for a full wave rectified voltage wave. (7 marks)

(ii) Explain star-delta connections with an example. (8 marks)

Or

(b) Explain the procedure of measuring 3 ϕ power using two wattmeter method with a neat diagram. (15 marks)

IV. (a) (i) Derive the e.m.f. equation of a transformer. (7 marks)

(ii) Compare the parameters of electric circuits with magnetic circuits. (8 marks)

Or

(b) (i) Derive an expression for Back e.m.f. of DC motor. (7 marks)

(ii) Explain the characteristics of DC motor and DC generator. (8 marks)

V. (a) Describe in detail the types and constructional features of synchronous machines with neat sketches.

Or

(b) Write technical notes on :

(i) Induction type energy meter. (7 marks)

(ii) Moving-coil voltmeter and Ammeter. (8 marks)

[4 × 15 = 60 marks]