

C 14997

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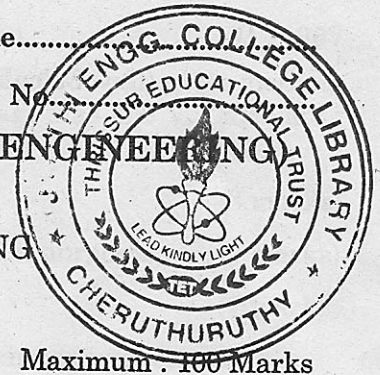
Name.....

Reg. No.....

COMBINED FIRST AND SECOND SEMESTER B.TECH. (ENGINEERING)  
DEGREE EXAMINATION, MAY 2011

CS 04 109—BASIC ELECTRICAL ENGINEERING

(Common for IT, PT, CS)

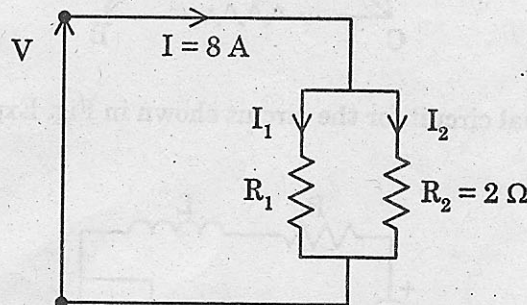


Maximum : 100 Marks

Time : Three Hours

Answer all questions.

- I. (a) State and explain Norton theorems.  
(b) Show Star-Delta, Delta-Star conversion with suitable example.  
(c) Define the following terms :—  
(i) RMS voltage. (ii) Average current.  
(iii) Form factor. (iv) Peak factor.  
(d) (i) State Kirchoff's Law.  
(ii) A current of 8 A is shared between 2 resistors in the network as shown. Calculate the current in the  $2 \Omega$  resistor, given that (a)  $R_1 = 2 \Omega$  ; (b)  $R_1 = 4 \Omega$ .



- (e) Compare Electric, Magnetic circuits.  
(f) Derive E.M.F. equation of a transformer.  
(g) Explain the constructional feature of synchronous machine.  
(h) Explain the construction and working of an moving iron voltmeter.

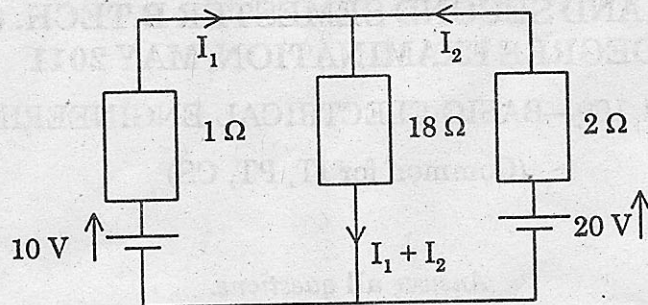
(8 × 5 = 40 marks)

- II. (a) (i) Compare series, parallel circuits with suitable examples.

(7 marks)

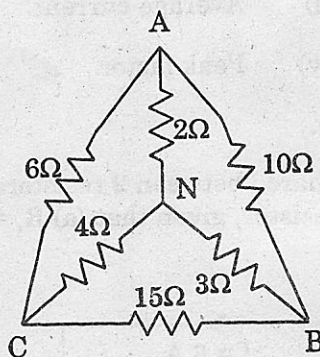
Turn over

- (ii) Calculate the currents in the network shown in Fig. Using superposition theorem.



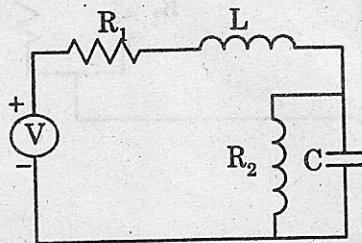
Or

- (b) (i) For the network shown in Fig. find the equivalent resistance between the terminals (1) A and B ; (2) A and N.



(8 marks)

- (ii) Draw the Dual circuit for the circuit shown in Fig. Explain the steps.



(7 marks)

- III. (a) (i) Explain resonance in series and parallel circuits.  
 (ii) Write the properties of Laplace transforms.

(7 marks)

(8 marks)

Or

- (b) (i) The input power to a three-phase motor was measured by the two watt meter method. The readings were 5.2 kW and -1.7 kW, and the line voltage was 400 V. Calculate :  
(a) Total power. (b) The power factor (c) The line current. (8 marks)
- (ii) Explain the advantages of three-phase supply for distribution purposes. (7 marks)
- IV. (a) (i) Explain energy stored in magnetic field. (7 marks)
- (ii) What is transformer ? Explain construction detail and working of transformer. (8 marks)

Or

- (b) (i) Explain the characteristics of DC motors. (7 marks)
- (ii) Explain the constructional features of various types of DC machines. (8 marks)
- V. (a) Explain voltage regulation using e.m.f. and m.m.f. methods. (15 marks)

Or

- (b) Write notes on :
- (i) Q-meter.
- (ii) Frequency and phase measurement.
- (iii) Digital instruments.

(5 + 5 + 5 = 15 marks)

[4 × 15 = 60 marks]