No. of Printed Pages : 4

BIEE-033

00281

DIPLOMA IN ELECTRICAL ENGINEERING (DELVI)

Term-End Examination

June, 2013

BIEE-033 : ELECTRICAL CIRCUIT THEORY

Time : 2 hours *Maximum Marks : 70*

Note : *Attempt **any five** questions. All questions carry **equal** marks.*

1. (a) Explain the difference between : 6

(i) Potential and potential difference

(ii) Resistance and resistivity

(iii) Active and passive element

(b) State and explain Ohms Law. What are the limitations of Ohm's Law ? 4

(c) An Electric iron is rated as 1kW, 250V. Calculate the current taken by it if it is connected to 220V, 50Hz ac supply. 4

2. (a) Two resistances connected in series having 18Ω equivalent resistance and when connected in parallel having 4Ω equivalent resistance. Find the value of each resistance. 7

(b) Calculate equivalent resistance between a-b terminal of the network shown in fig - 1. 7

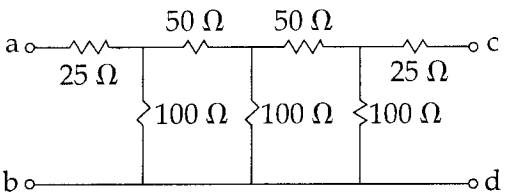

Fig. 1

3. (a) Find current flowing in each branch of the network as shown in fig. 2 using Nodal analysis. 7

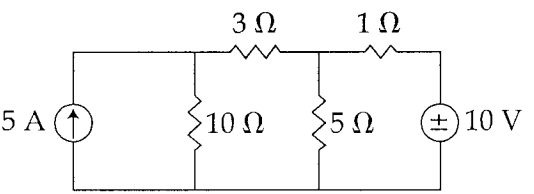

Fig. 2

(b) Find equivalent resistance across a-b terminal of the network shown in fig. 3. 7

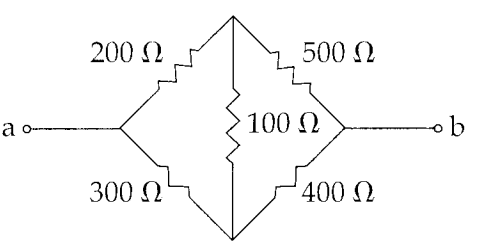

Fig. 3

4. (a) State and prove maximum power transfer theorem. 7

(b) State and explain Thevenin Theorem. List the steps required to obtain the Thevenin's equivalent circuit. 7

5. Find rms and average value of half wave rectifier output wave form as shown in fig. 4. 14

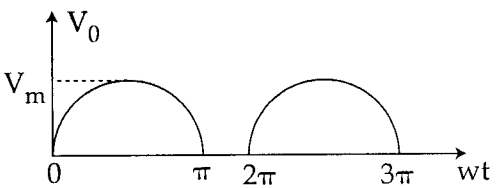

Fig. 4

6. (a) A voltage of 200 sin100πt is applied to a coil having R = 200 Ω and L = 0.38 H. Find the expression for current and power taken by coil. 7

(b) Explain the following terms as applied to ac circuits. 7

(i) Impedance

(ii) Power factor

(iii) Phase angle

7. (a) Explain active power, reactive power and apparant power. Also explain their significance. 7

(b) Explain resonance in parallel RLC circuit. Derive expression for resonance frequency. 7

8. Write short notes on **any four** of the following : **3.5x4=14**

(a) Duality and dual network

(b) RLC series resonance

(c) Super position Theorem

(d) Star - delta Transformation

(e) Source Transformation

(f) Norton Theorem