**CONCODIA UNIVERSITY**

**Department of Electrical & Computer Engineering**

**ELEC-275/4: Winter 2013**

**Midterm Exam**

**Date: March 3, 2013. Time: 75 Minutes.**

**Dr. S. K. Das Answer all the questions.**

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Answer all the questions.

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1. (a) Replace the circuit to the right of ***a-b*** of Fig.1 by its equivalent single resistance R­eq ;

(b) Using this R­eq ­, find the voltage **V**. (4 marks)

Req

**3** ****

**2 A**

**2** ****

**1** ****

**12** ****

**6**

**10** ****

**+**

**V**

-

***a***

***b***

**6**

Fig. 1.

2. Using **nodal analysis**, find **V2** and **V3** of Fig. 2. (V2 and V3 are positive with respect to the reference node.)

(6 marks)

**4 V**

**3 A**

**2 **

**2 **

V2

V3

**4 **

**Vref = 0**

**- +**

**3 V**

V1

Fig. 2.

3. Using **mesh analysis**, find **I2**  of Fig. 3.

(5 marks)

I3

**3 A**

**10** ****

**2 A**

**6 **

**3 V**

I1

I1

I3

I2

**5 V**

**- +**

**4** ****

3 ****

Fig. 3.

4. (a) Replace the circuit to the left of ***a****-****b*** of Fig. 4 by its **Thevenin** equivalent. Draw this equivalent circuit;

(b) Find the value of RL  that will dissipate maximum power;

(c) Then calculate this maximum power.

(5 marks)

***a***

**6 Amps**

**2** ****

**8 **

**15 **

**4 **

**RL**

***b***

**8 volts**

Fig. 4.

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