



UNIVERSITI KUALA LUMPUR
Malaysia France Institute

FINAL EXAMINATION
JANUARY 2011 SESSION

SUBJECT CODE : FED 10103
SUBJECT TITLE : ELECTRICAL FUNDAMENTAL
LEVEL : DIPLOMA
TIME / DURATION : 3.30pm – 6.00pm
(2.5 HOURS)
DATE : 09 MAY 2011

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper CAREFULLY.
2. This question paper is printed on both sides of the paper.
3. Please write your answers on the answer booklet provided.
4. Answer should be written in blue or black ink except for sketching, graphic and illustration.
5. This question paper consists of TWO (2) sections. Section A and B. Answer all questions in Section A. For Section B, answer two (2) question only.
6. Answer all questions in English.

THERE ARE 6 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 60 marks)

INSTRUCTION: Answer ALL questions

Please use the answer booklet provided.

Question 1

a) Identify the color code of the following resistors

Value	1 st band	2 nd band	3 rd band	4 th band
$1.5 \times 10^3 \Omega \pm 10\%$				
$3.3 \times 10^6 \Omega \pm 5\%$				
$51 \text{ k}\Omega \pm 10\%$				
$79 \text{ M}\Omega \pm 10\%$				

(8 marks)

b) Three lamps A, B and C as shown in **Figure 1(a)** are connected in series across a 18V supply. Lamp A has an internal resistance R_1 , lamp B has an internal resistance R_2 and lamp C has an internal resistance R_3 as shown in **Figure 1(b)**. If the total resistance is 36Ω , voltage drop across R_2 is $V_2 = 5\text{V}$ and voltage drop across R_3 is $V_3 = 3\text{V}$, determine:

- i. The voltage drops across R_1
- ii. The supply current, I
- iii. The value of resistors R_1 , R_2 and R_3 .

(12 marks)

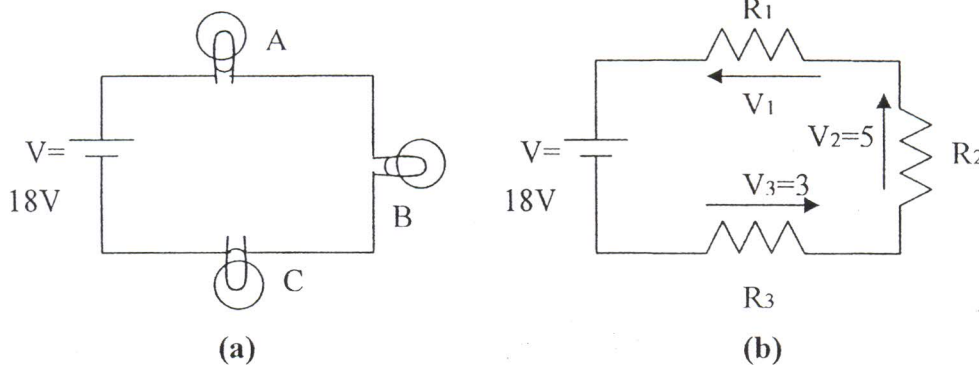


Figure1

Question 2

Determine the total current from the source and the current through each resistor for each position of the ganged switch in **Figure 2**

(20 marks)

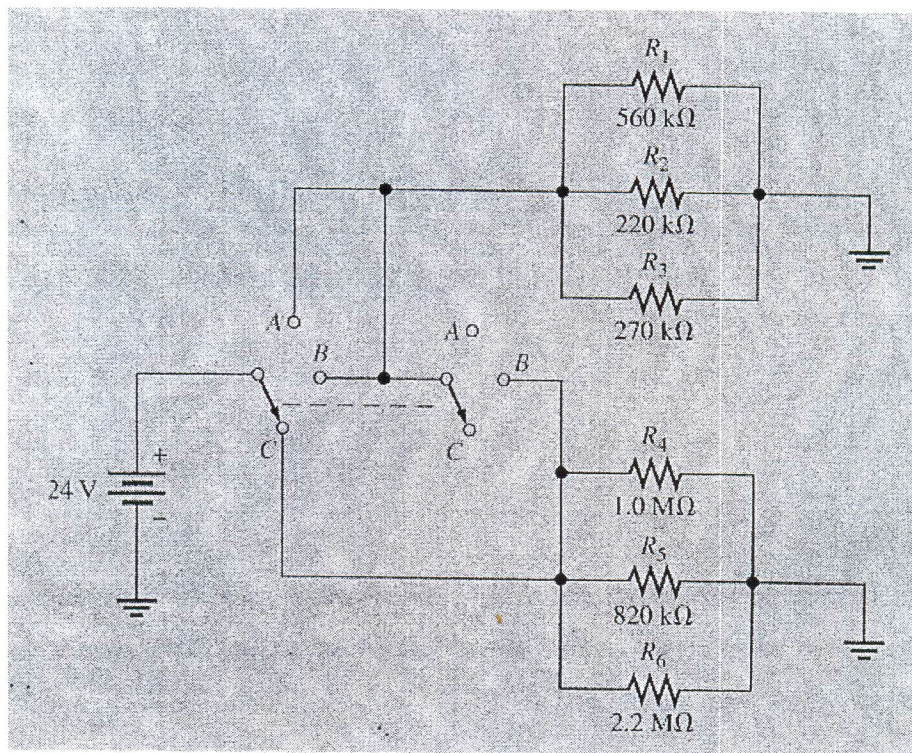


Figure 2

Question 3

Use mesh analysis to find the current in each resistor of the circuit shown in **Figure 3**. After finding the current, find the power dissipated at resistor $250\ \Omega$

(20 marks)

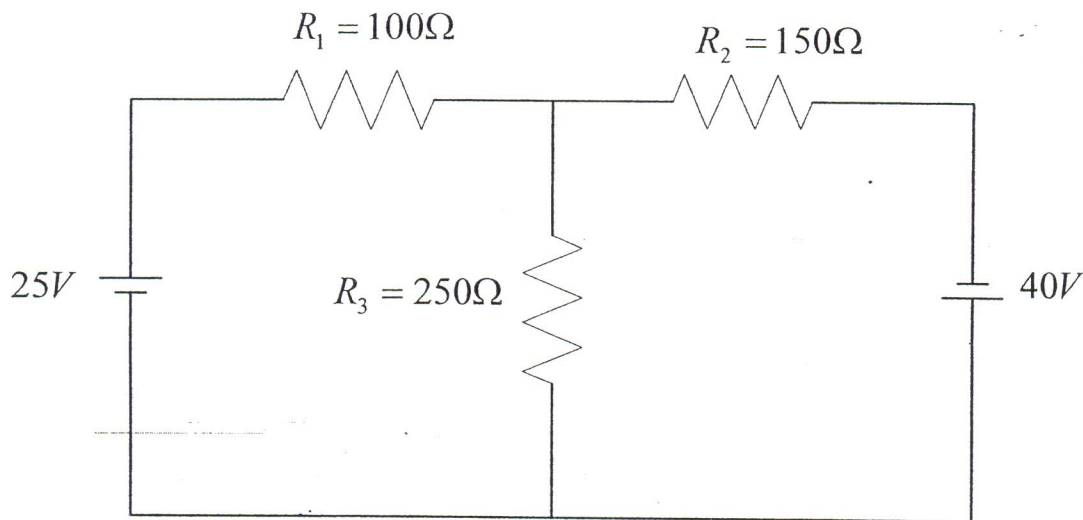


Figure 3

SECTION B (Total :40 marks)

INSTRUCTION: Answer only TWO (2) questions.

Question 4

(a) In a series-parallel circuit as shown in **Figure 4**, the two parallel branches B and C are in series with A. Calculate :-

- i. The total resistance, R_T
- ii. The currents I_A , I_B and I_C .
- iii. The voltage drop across each resistor (V_A , V_B , V_C and V_D)

(12 marks)

- (b) i. Briefly explain the Kirchoff's Voltage Law and Kirchoff's Current Law.
- ii. From Figure 4, verify that $V_S = V_A + V_B + V_D$ and $I_A = I_B + I_C$

(8 marks)

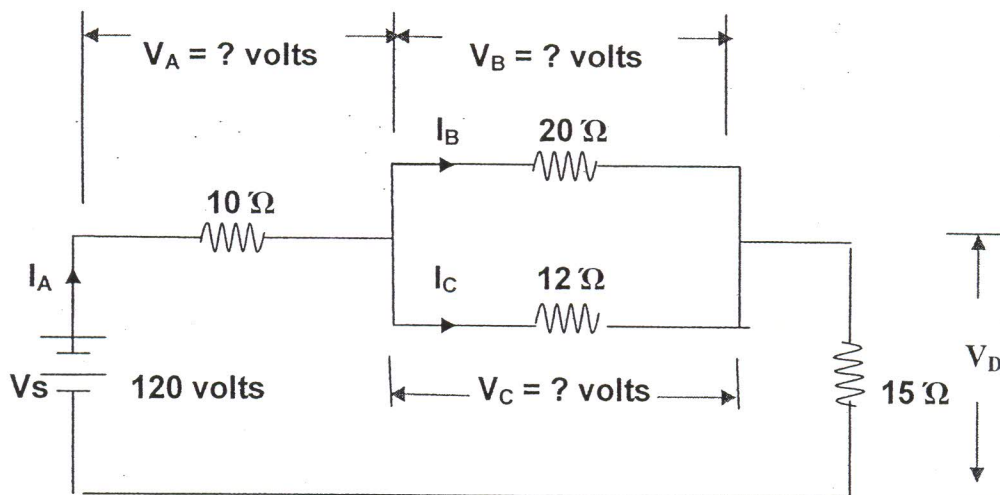


Figure 4

Question 5

(a) What are the 5 steps for applying Thevenin's Theorem?

(5 marks)

(b) Determine the voltage and current for the load resistor in the bridge circuit of **Figure 5**.

(15 marks)

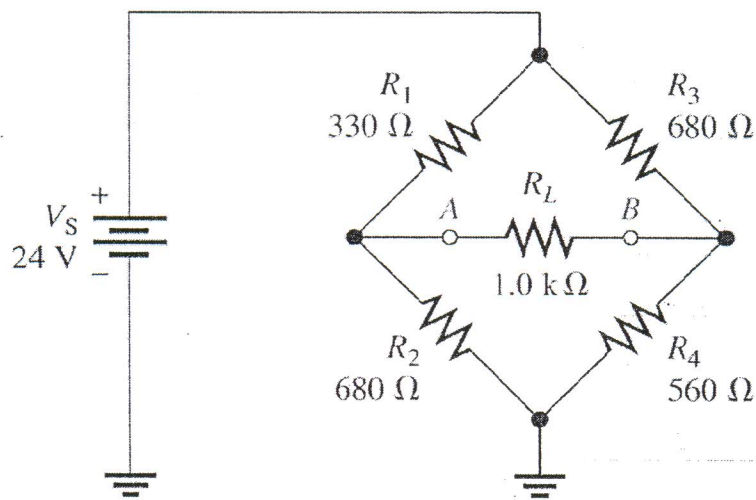


Figure 5

Question 6

(a) What are the 4 steps for applying Superposition Theorem?

(8 marks)

(b) Determine the current through R_3 by using Superposition theorem

(12 marks)

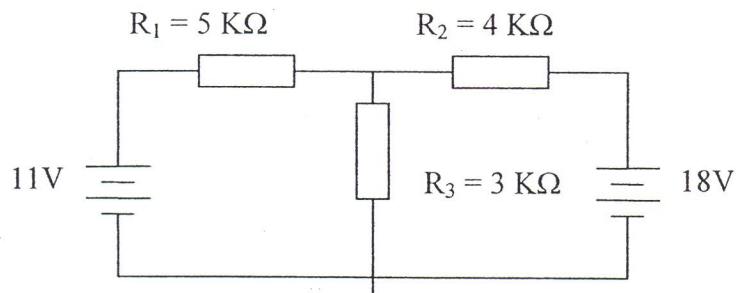


Figure 6