



**UNIVERSITI KUALA LUMPUR**  
**Malaysia France Institute**

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**FINAL EXAMINATION**  
**JANUARY 2011 SESSION**

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**SUBJECT CODE** : FED 10202  
**SUBJECT TITLE** : ELECTRICAL PRINCIPLES  
**LEVEL** : DIPLOMA  
**TIME / DURATION** : 3.30pm – 5.30pm  
( 2 HOURS )  
**DATE** : 14 MAY 2011

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**INSTRUCTIONS TO CANDIDATES**

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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. Answers 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 one (1) question only.
6. Answer all questions in English.

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THERE ARE 5 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

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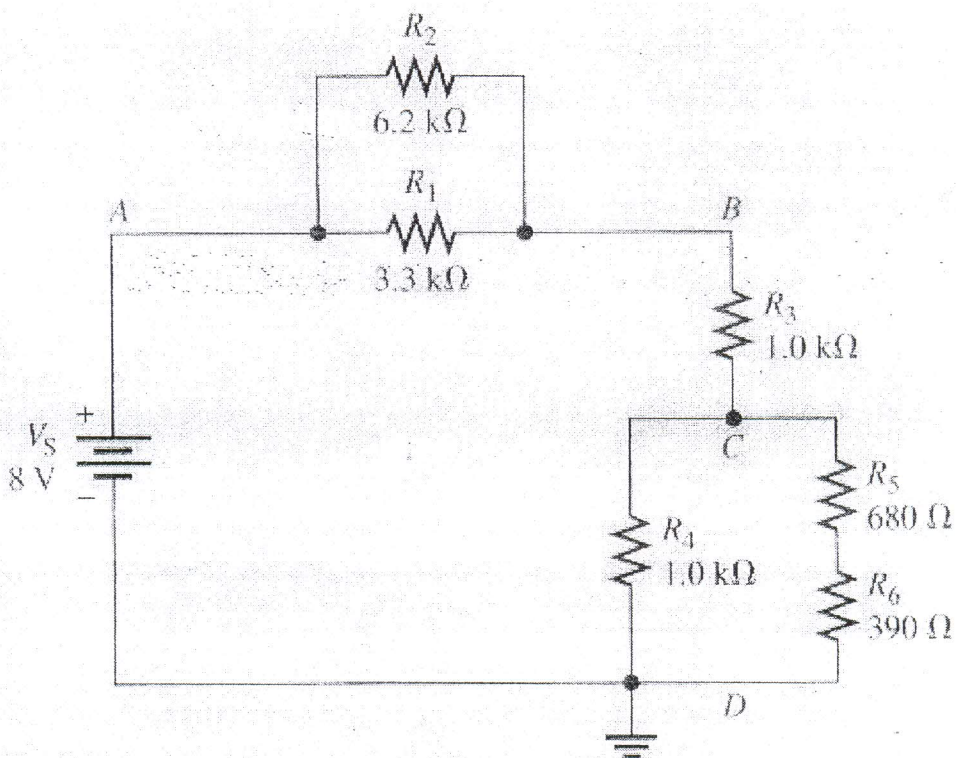
**SECTION A (Total:75 marks)**

**INSTRUCTION: Answer ALL questions.**  
**Please use the answer booklet provided.**

**Question 1**

For the circuit shown in **Figure 1**, determine:

- (a) The total resistance for the circuit. (1 marks)
- (b) The current through each resistor. (12 marks)
- (c) The voltage drop across each resistor. (6 marks)
- (d) The power dissipated on each resistor. (6 marks)



**Figure 1**

**Question 2**

For the circuit shown in **Figure 2**, determine:

(a) the main characteristics of parallel circuits in terms of resistances, currents and voltage drop across resistors.

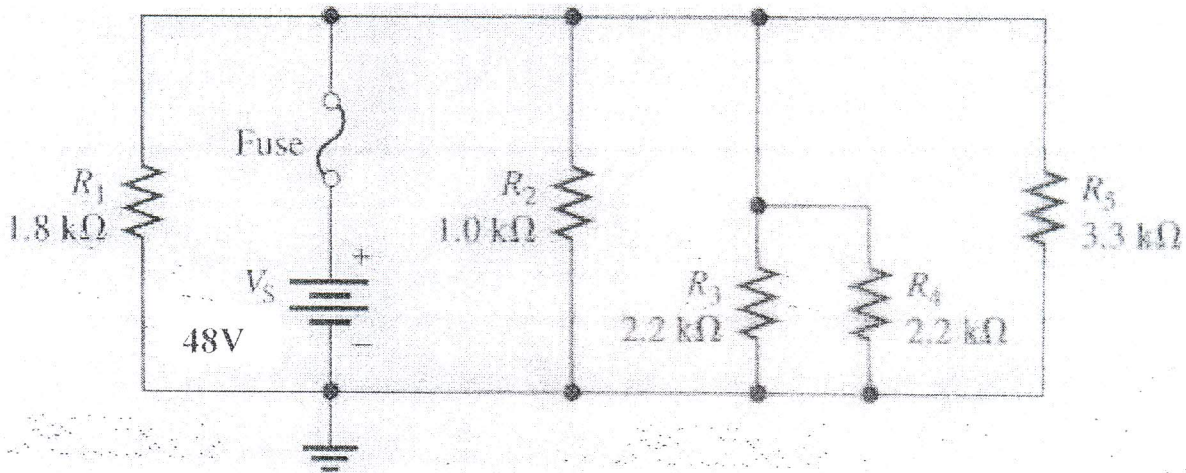
(9 marks)

(b) the current through each resistor.

(10 marks)

(c) the minimum current rating for the fuse in this circuit.

(6 marks)



**Figure 2**

**Question 3**

- (a) Describe the basic construction of a capacitor. (4 marks)
- (b) Describe the charging and discharging process of a capacitor. (6 marks)
- (c) How long will it take for the initially uncharged capacitor in **Figure 3** to charge to 80V? (8 marks)
- (d) What is the capacitor voltage 1.4 ms after the switch is closed? (7 marks)

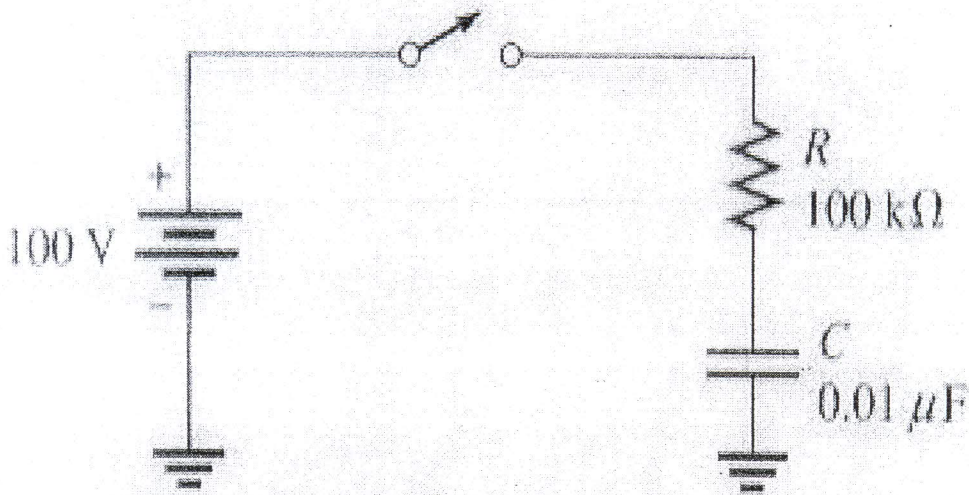


Figure 3

**SECTION B (Total: 25 marks)**

**INSTRUCTION: Answer ONE (1) question only**

**Please use the answer booklet provided.**

**Question 4**

For the circuit shown in **Figure 4**, determine:

(a) the time constant,  $\tau$ .

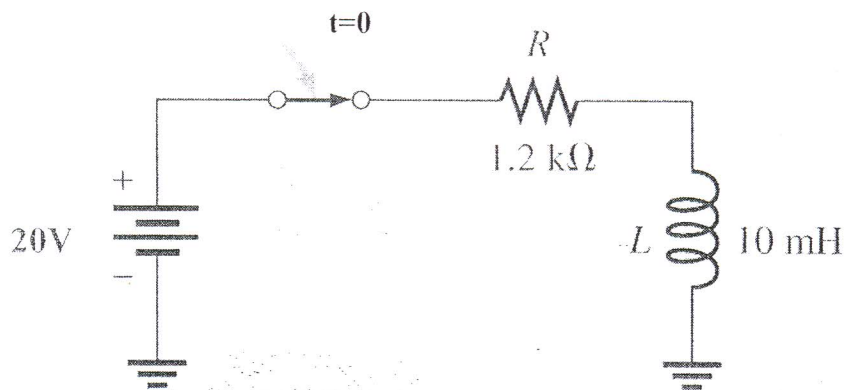
(6 marks)

(b) current at time  $\tau$ ,  $2\tau$ ,  $3\tau$ ,  $4\tau$  and  $5\tau$  measured from the switch is closed.

(10 marks)

(c) the physical properties that affect inductance.

(9 marks)



**Figure 4**

**Question 5**

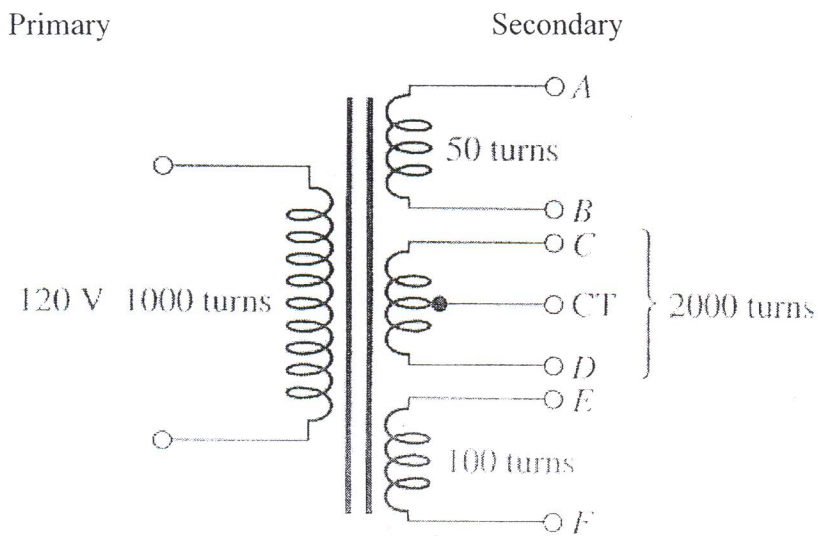
Refer to **Figure 5**. Determine:

- (a) The voltages  $V_{AB}$ ,  $V_{CD}$ ,  $V_{(CT)C}$  and  $V_{EF}$ .

(12 marks)

- (b) Describe center-tapped, autotransformer and multiple winding transformer.

(13 marks)



**Figure 5**

**END OF QUESTION PAPER**