



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

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

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**SUBJECT CODE** : FCD 10202  
**SUBJECT TITLE** : RAC AND ELECTRICITY  
**LEVEL** : DIPLOMA  
**TIME / DURATION** : 12.30pm - 2.30pm  
( 2 HOURS )  
**DATE** : 12 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. 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.

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THERE ARE 6 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

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## SECTION A (Total: 60 marks)

INSTRUCTION: Answer ALL questions.

Please use the answer booklet provided.

## Question 1

- a) Determine whether the statement below is TRUE or FALSE
- i) For parallel circuit,  $V_T = V_1 + V_2 + V_3$  (1 marks)
- ii) The total resistance for series circuit is  $1/R_T = 1/R_1 + 1/R_2 + 1/R_3$  (1 marks)
- iii) Each voltage drop at parallel resistance is different even the value of current is the same. (1 marks)
- iv) The unit of resistance is Watt in W (1 marks)
- b) Determine the total resistance for Figure Q1(b) below

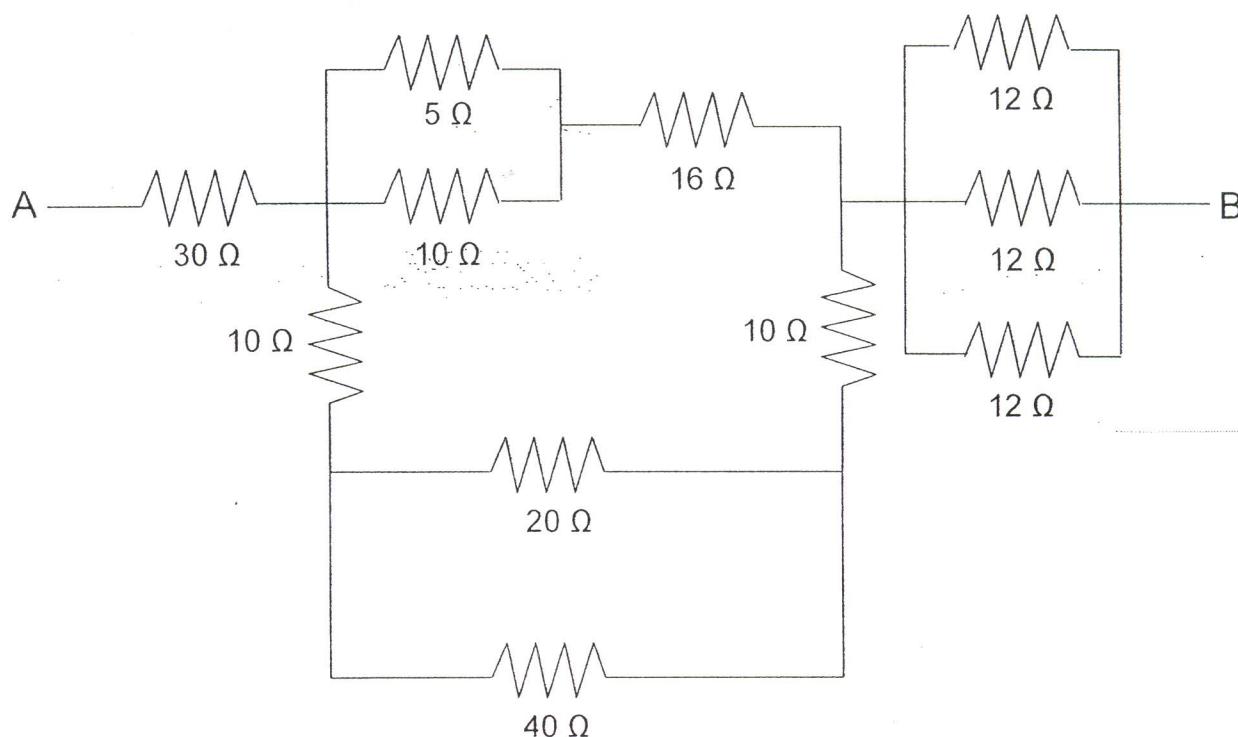


Figure Q1(b): Circuit Diagram for Digital Spedo Meter

(6 marks)

c) Explain Ohm's Law

(2 marks)

d) From Figure Q1(d) below find the value of  $R_1$

(8 marks)

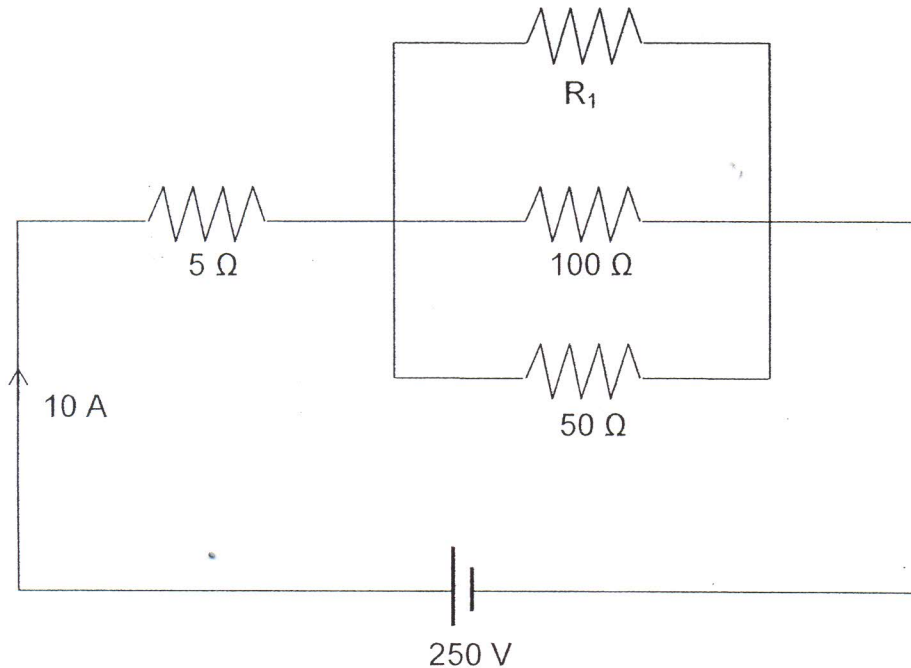


Figure Q1(d): Circuit Diagram for Electric Radio

## Question 2

a) Four (4) 3 V buzzer are wired in parallel. Three of these buzzers draw a current of 0.2 A each and the fourth buzzers draw a current of 0.04A. Draw a circuit diagram and determine

i) The resistance of each buzzer in  $\Omega$

(4 marks)

ii) The total current drawn by the circuit in A

(1 marks)

iii) The total voltage required for the circuit in V

(1 marks)

iv) Total resistance of the four buzzers in parallel in  $\Omega$

(2 marks)

v) Power dissipate at each buzzers in Watt

(2 marks)

- b) There is 4 motors with resistance  $20\ \Omega$ ,  $80\ \Omega$ ,  $40\ \Omega$  and  $240\ \Omega$  respectively connected in parallel. If the total power loss from the circuit is  $15\text{ W}$  calculate
- i) Total voltage of the circuit in V (4 marks)
- ii) Current flow in each motor in A (4 marks)
- iii) Total current flow in the circuit in A (2 marks)

### Question 3

- a) Explain briefly the following law:
- i) Kirchoff's Current Law (KCL) (2 marks)
- ii) Kirchoff's Voltage Law (KVL) (2 marks)
- b) From the circuit Diagram Q3(b) below, determine
- i) Total current across the circuit in A (8 marks)
- ii) Voltage drop in V and power dissipate in Watt at each resistance (8 marks)

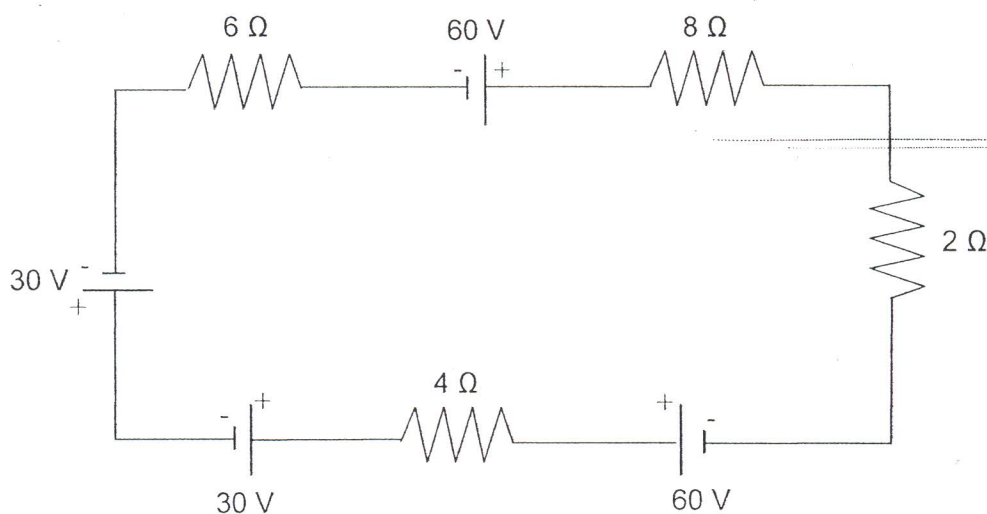


Diagram Q3(b): Closed Loop Diagram Electrical Circuit

**SECTION B (Total: 40 marks)****INSTRUCTION: Answer TWO (2) question only****Please use the answer booklet provided.****Question 4**

a) For the AC-Voltage sinusoidal waveform, describe the following term:

i) Period

(2 marks)

ii) Frequency

(2 marks)

iii) Angular velocity

(2 marks)

b) Figure Q4(b) below shows the signal for AC-Voltage sinusoidal waveform

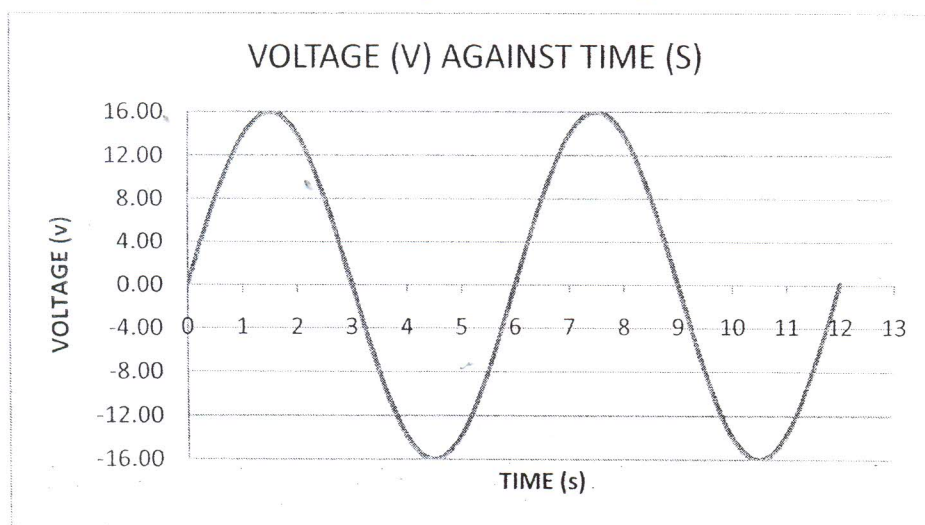


Figure Q4(b): Sinus Wave Form

From the signal above determine:

i) Frequency in Hz

(2 marks)

ii) Peak-Peak Voltage in V

(2 marks)

iii) RMS Voltage in V

(2 marks)

iv) Time in sec during voltage is 8 V. ( $0 < t < 12$ )

(8 marks)

## Question 5

a) From the Figure Q5(a) below, determine the following values:

i) Total Voltage in V

(6 marks)

ii) Values of current passes through  $5\ \Omega$  and  $20\ \Omega$  resistance in A

(14 marks)

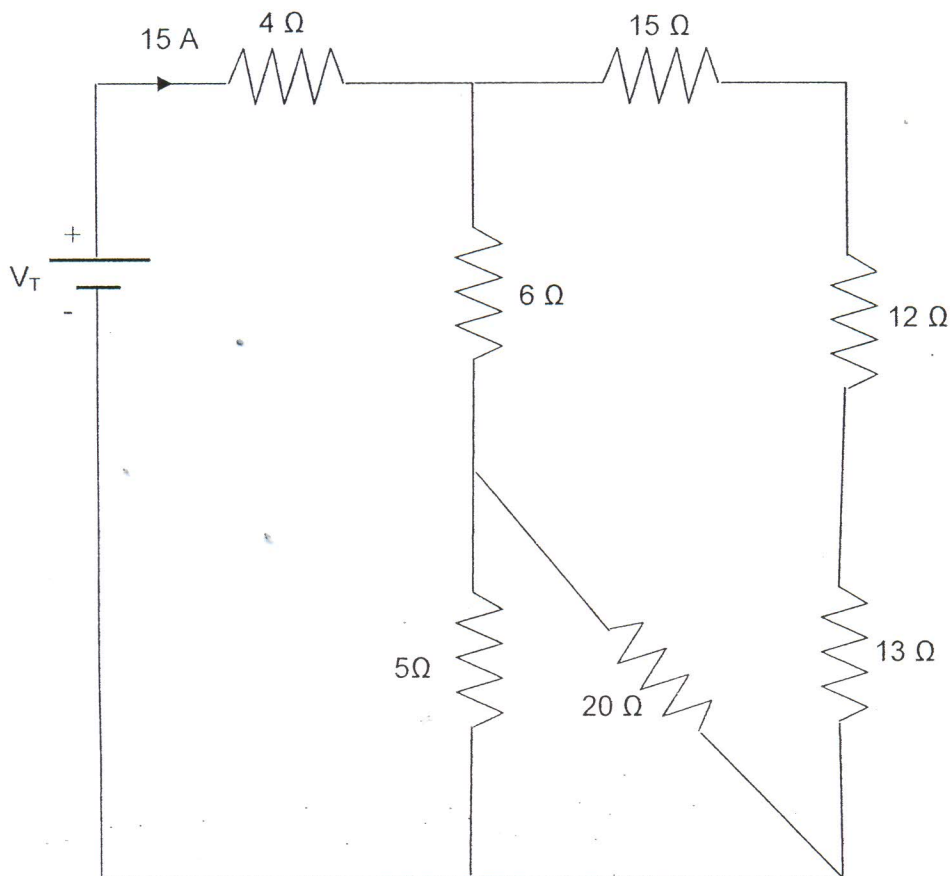


Figure Q5(a): Circuit Diagram for Digital Thermometer



**Question 6**

- a) List two (2) factors which can strengthen their electromagnet field (2 marks)
- b) List 4 techniques which electricity can be produced and explain briefly each technique (8 marks)
- c) Describe the electronic component below together with the symbol employed
- i) Diode (4 marks)
- ii) Transistor (4 marks)
- iii) Resistor (4 marks)

**END OF QUESTION**