DEE 1

KOLEJ YAYASAN PELAJARAN JOHOR

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FINAL EXAMINATION

COURSE	:	**LITAR ELEKTRIK**
COURSE CODE	:	**DEG 1043**
EXAMINATION	:	**NOVEMBER 2016**
TIME / DURATION	:	**2 ½ HOURS**

INSTRUCTION TO CANDIDATES

1. This examination paper consists of **FIVE (5) Question**.

2. Answer **FOUR (4)** Questions **ONLY** From **FIVE (5)** Questions.

3. Candidates are not allowed to bring any material to examination room **EXCEPT** with the permission from invigilator.

4. Please check to make sure that this examination pack consist of:

   i. Question paper

   ii. Answering Booklet

THERE ARE SEVEN (7) PAGES OF QUESTIONS, INCLUDING THIS PAGE

Instructions: Answer FOUR (4) Questions ONLY From FIVE (5) Questions In Answering Booklet.

Arahan: Jawab EMPAT (4) Soalan SAHAJA Daripada LIMA(5) Soalan Dalam Buku Jawapan.

Question 1/*Soalan 1*

a) The number of electrons through a particular point in a closed circuit is 10 billion per seconds. What is the amount of current flowing in the circuit?

Bilangan elektron melalui titik tertentu dalam satu litar tertutup ialah 10 billion per saat. Berapakah jumlah arus yang mengalir dalam litar tersebut?

(5 Marks/*Markah*)

b) Calculate the current I and power P absorbed by the resistor R, when the resistance is 1 kΩ and the block voltage is 10V.

Kirakan arus I dan kuasa P yang diserapkan oleh perintang R, apabila nilai rintangannya adalah 1 kΩ dan voltan yang merintanginya adalah 10V.

(5 Marks/*Markah*)

c) 1 lamp uses 125V with a 0.7A current while lamp 2 uses 110V with a 0.9A current. Both lights are operating for 7 hours/day. The total costs of electricity per month for both lamps are RM 12.90.

i) Calculate the energy used and the cost per kilo watt hour for each light.
ii) State which lamp has the lowest cost for 1 kilo watt hour energy used. Write the answer for energy in metric prefix. (1 month = 30 days).

Lampu 1 menggunakan 125V dengan arus 0.7A manakala lampu 2 menggunakan 110V dengan arus 0.9A. Kedua-dua lampu tersebut beroperasi selama 7 jam/hari. Kos tenaga elektrik sebulan untuk kedua-dua lampu ialah RM 12.90.

i) Kira tenaga yang digunakan dan kos per kilowattjam bagi kedua-dua lampu tersebut.

ii) Nyatakan lampu manakah yang paling kurang kos untuk penggunaan tenaga sebanyak 1 kilowattjam. Tulis jawapan untuk tenaga dalam prefik metrik. (1 bulan = 30 hari).

(15 Marks/*Markah*)

Question 2/*Soalan 2*

a) Based on Figure Q2 (a) below, we can use Kirchhoff's Current Law (KCL) to explain the figure. Describe what you understand about the diagram provided.

Berdasarkan Rajah Q2 (a) dibawah, kita boleh menggunakan Hukum Arus Kirchhoff (HAK) bagi menjelaskan rajah tersebut. Terangkan apa yang anda faham berdasarkan rajah yang diberikan.

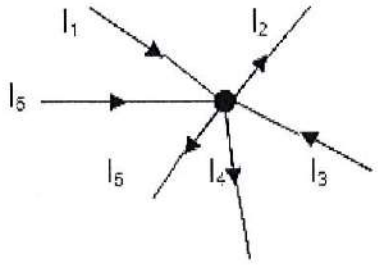

Figure Q2 (a)/*Rajah Q2 (a)*

(5 Marks/*Markah*)

b) Referring to Figure Q2 (b), determine the following values:

i) Total resistance viewed from the voltage supply.

ii) Supply current, Is.

iii) Voltage, V_1 using voltage divider rule.

iv) Voltage V_A using Kirchoff's voltage law.

v) Current, I_2 using Kirchoff's current law.

vi) Current, I_4 using current divider rule.

Merujuk kepada Rajah Q2(b), tentukan nilai berikut :

i) Rintangan jumlah dilihat dari bekalan voltan.

ii) Arus bekalan Is.

iii) Voltan V_1 menggunakan hukum pembahagi voltan.

iv) Voltan V_A menggunakan aturan voltan Kirchoff.

v) Arus I_2 menggunakan aturan arus Kirchoff.

vi) Arus I_4 menggunakan hukum pembahagi arus.

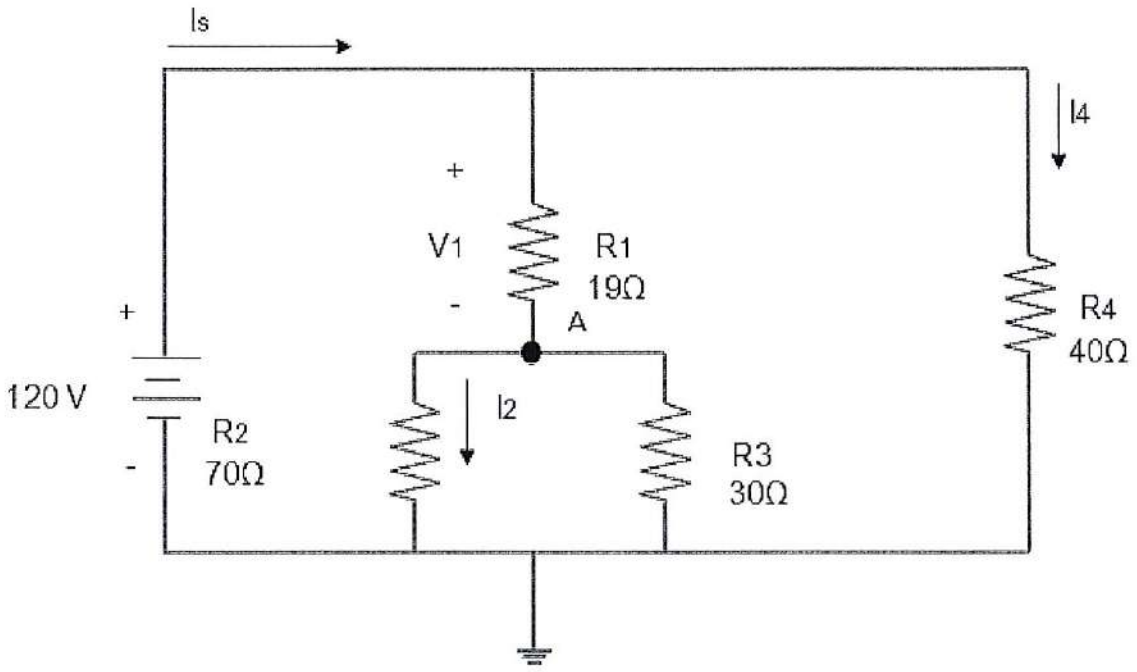

Figure Q2 (b)/*Rajah Q2 (b)*

(20 Marks/*Markah*)

Question 3/*Soalan 3*

a) Explain with examples about Theorem Norton.

Terangkan beserta contoh bagi Teorem Norton.

(5 Marks/*Markah*)

b) Referring to Figure Q3 (b), looking from terminal A-B,

i) Find the Norton's equivalent resistance, R_N.

ii) Determine the Norton's equivalent current, I_N using superposition theorem.

iii) Draw the Norton's equivalent circuit.

iv) Calculate the current flow through the load resistor, R_L.

Merujuk kepada Rajah Q3 (b), dilihat dari terminal A-B:

i) Dapatkan rintangan setara Norton, R_N.

ii) Tentukan arus setara Norton, I_N dengan menggunakan teorem tindihan.

iii) Lukiskan litar setara Norton.

iv) Kirakan arus melalui perintang beban R_L.

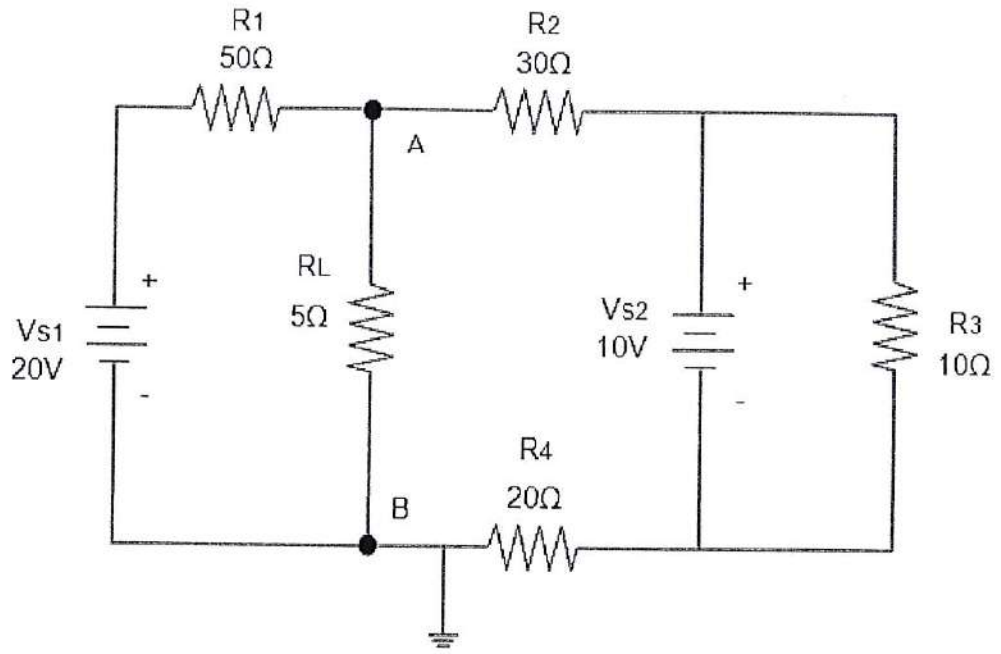

Figure Q3 (b)/*Rajah Q3 (b)*

(20 Marks/*Markah*)

Question 4/*Soalan 4*

a) What is a storage energy element and give TWO (2) examples.

Apakah yang dimaksudkan dengan elemen penyimpan tenaga dan berikan DUA (2) contoh.

(5 Marks/*Markah*)

b) Referring to Figure Q4 (b),

i) Draw the circuit at steady-state.

ii) Find the steady-state currents, I_S dan I_1.

iii) Find the steady-state voltage, V_C.

iv) Find the energy stored in each inductor at steady-state.

v) Find the energy stored in the capacitor at steady-state.

Merujuk Rajah Q4 (b) di bawah:

i) Lukis litar pada keadaan mantap

ii) Dapatkan arus keadaan mantap, Is dan I1.

iii) Dapatkan voltan keadaan mantap.

iv) Dapatkan tenaga yang tersimpan di dalam setiap induktor pada keadaan mantap.

v) Dapatkan tenaga yang tersimpan pada kapasitor pada keadaan mantap.

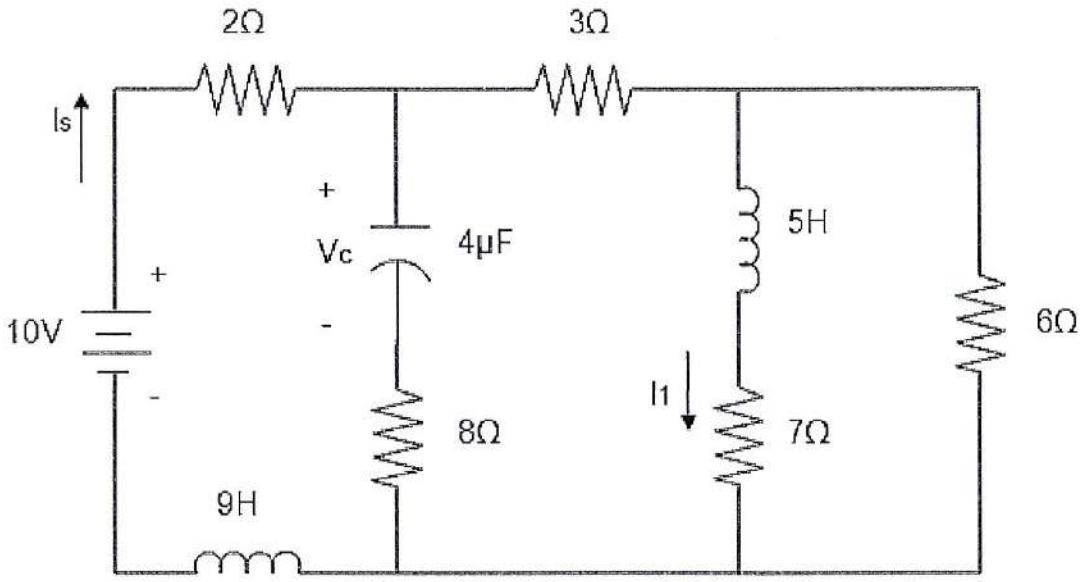

Figure Q4 (b)/*Rajah Q4 (b)*

(20 Marks/*Markah*)

Question 5/*Soalan 5*

a) State FIVE (5) hand tools and their functions that are used for the production project.

Nyatakan LIMA (5) peralatan tangan serta fungsinya yang di gunakan bagi menghasilkan sesuatu projek.

(10 Marks/*Markah*)

b) The following Table Q5 (b) shows the types of presenters in the form of bits eyes. Draw the side view and front view according to the form of bits.

Jadual Q5 (b)berikut menunjukkan jenis-jenis bagi mata pemateri mengikut bentuk bitnya. Lukiskan pandangan sisi dan hadapan mengikut mengikut bentuk bitnya.

Form of Bit/*Bentuk Bit*	*Side View/ Pandangan Sisi*	Front View/ *Pandangan Hadapan*
Mata pahat		
Mata Rencong		
Mata Tirus		

Table Q5 (b)/*Jadual Q5 (b)*

(6 Marks/*Markah*)

c) State NINE(9) step process of creating a project on track following circuit board accordingly.

Nyatakan SEMBILAN(9) langkah proses membuat projek di atas papan litar jalur mengikut urutannya.

(9 Marks/*Markah*)

END OF QUESTIONS/*SOALAN TAMAT*