

IMPORTANT EQUATIONS

CAPACITOR

$$\tau = RC$$

Charging

$$V_c(t) = E(1 - e^{-\frac{t}{\tau}}), I_c(t) = \frac{E}{R}e^{-\frac{t}{\tau}}, V_R(t) = Ee^{-\frac{t}{\tau}}$$

Discharging

$$V_c(t) = Ee^{-\frac{t}{\tau}}, I_c(t) = \frac{E}{R}e^{-\frac{t}{\tau}}, V_R(t) = Ee^{-\frac{t}{\tau}}$$

Initial conditions

$$V_{c_i}(t) = V_f + (V_i - V_f)e^{-\frac{t}{\tau}}$$

INDUCTOR

$$\tau = \frac{L}{R}$$

Storage Phase

$$I_L(t) = \frac{E}{R}(1 - e^{-\frac{t}{\tau}}), V_L(t) = Ee^{-\frac{t}{\tau}}, V_R(t) = E(1 - e^{-\frac{t}{\tau}})$$

Release Phase

$$I_L(t) = \frac{E}{R}e^{-\frac{t}{\tau}}, V_L(t) = -Ee^{-\frac{t}{\tau}}, V_R(t) = Ee^{-\frac{t}{\tau}}$$

Initial conditions

$$I_{L_i}(t) = I_f + (I_i - I_f)e^{-\frac{t}{\tau}}$$

FINAL EXAMINATION / PEPERIKSAAN AKHIR
SEMESTER 2 – SESSION 2013 / 2014
PROGRAM KERJASAMA

COURSE CODE : DDPE 1102
KOD KURSUS
COURSE NAME : ELECTRIC CIRCUIT / LITAR ELEKTRIK
NAMA KURSUS
YEAR / PROGRAMME : 1 DDPB / E / K
TAHUN / PROGRAM
DURATION : 2 HOURS 30 MINUTES/ 2 JAM 30 MINIT
TEMPOH
DATE : APRIL 2014
TARIKH

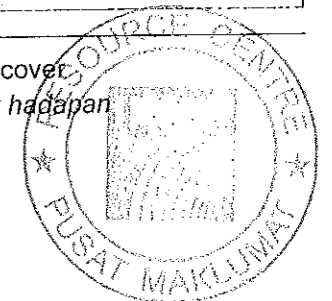
INSTRUCTION :
[ARAHAN]

ANSWER ALL QUESTIONS. WRITE YOUR ANSWER IN THE ANSWER BOOKLET(S) PROVIDED.
[JAWAB **SEMUA** SOALAN. TULIS JAWAPAN ANDA DI DALAM KERTAS JAWAPAN YANG
DISEDIAKAN]

(You are required to write your name and your lecturer's name on your answer script)
(Pelajar dikehendaki tuliskan nama dan nama pensyarah pada skrip jawapan)

NAME / NAMA PELAJAR	:
I.C NO. / NO. K/PENGENALAN	:
YEAR / COURSE TAHUN / KURSUS	:
COLLEGE'S NAME / NAMA KOLEJ	:
LECTURER'S NAME / NAMA PENSYARAH	:

This examination paper consists of ...8... pages including the cover.
Kertas soalan ini mengandungi8..... muka surat termasuk kulit hadapan



Q2. (a) State Kirchoff's law.

Nyatakan hukum Kirchoff.

(8 marks/markah)

(b) Referring to the circuit in Figure Q2(b), find:

- i. the total resistance, R_T .
- ii. the current, I_x .
- iii. the voltage, V_x using voltage divider rule (VDR).
- iv. total power dissipated by the circuit, P_T .

Merujuk kepada litar di dalam Rajah Q2(b), dapatkan:

- i. jumlah rintangan, R_T .
- ii. arus, I_x .
- iii. voltan, V_x dengan menggunakan hukum pembahagi voltan.
- iv. jumlah kuasa yang dilesapkan oleh litar, P_T .

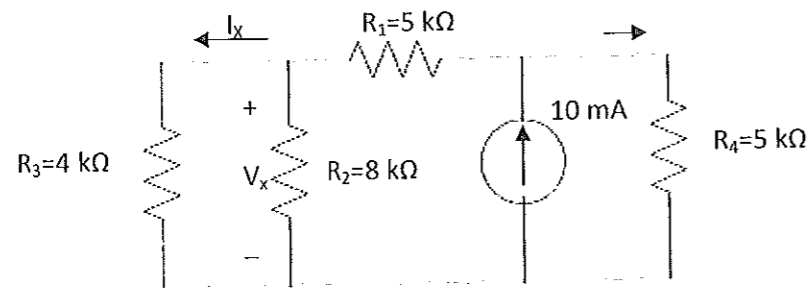


Figure Q2(b)/Rajah Q2(b)

(12 marks/markah)

Q3. (a) Sketch the schematic symbol for current source and voltage source.

Lakarkan simbol skematik bagi punca arus dan punca voltan

(4 marks/markah)

(b) Referring to the circuit in Figure Q3(b), given that the current I_2 is 1.5 mA.

- i. Convert the voltages sources, V_{s1} and V_{s2} to current sources. Redraw the circuit.
- ii. Calculate the value of resistor R_2 .

Merujuk kepada litar dalam Rajah Q3(b), diberi arus I_2 adalah 1.5 mA.

- i. Tukarkan sumber-sumber voltan, V_{s1} dan V_{s2} kepada sumber arus. Lukis semula litar tersebut.
- ii. Kira nilai resistor, R_2 .

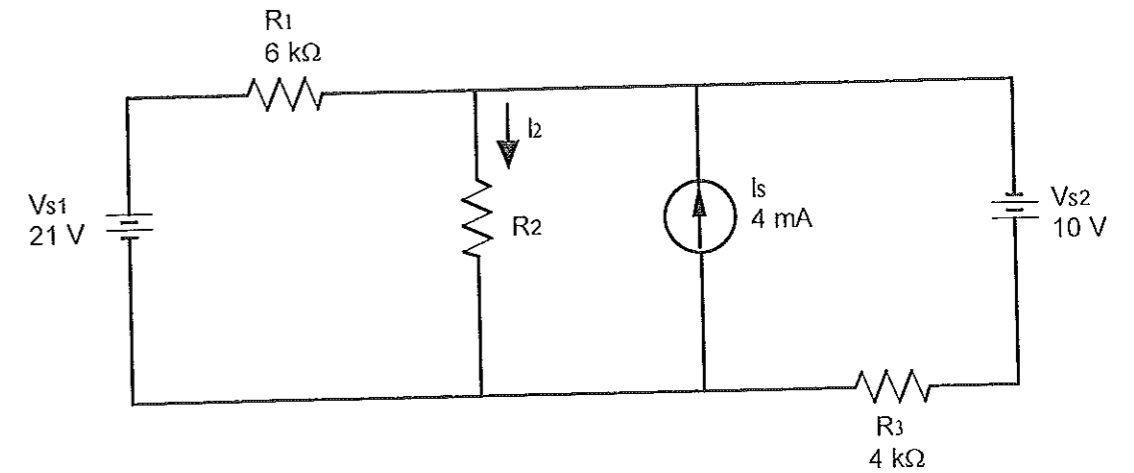


Figure Q3 (b)/Rajah Q3(b)

(11 marks/markah)

(c) Referring to the circuit in Figure Q3 (c), find I_o using superposition theorem.

Merujuk kepada Rajah Q3(c), Dapatkan I_o dengan menggunakan teoram tindihan

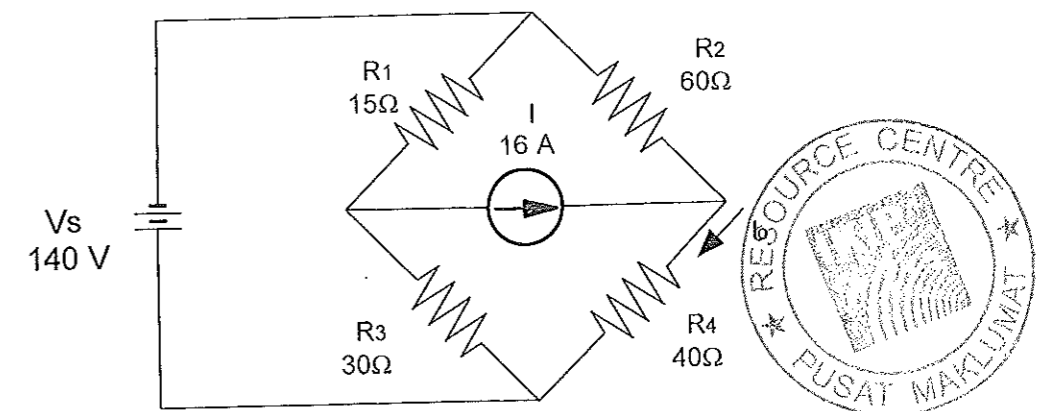


Figure Q3(c)/Rajah Q3(c)

(15 marks/markah)

