SECTION A: 80 MARKS
BAHAGIAN A: 80 MARKAH

INSTRUCTION:
This section consists of **FOUR (4)** structured questions. Answer **ALL** questions

ARAHAN:
*Bahagian ini mengandungi **EMPAT (4)** soalan berstruktur. Jawab **SEMUA** soalan.*

QUESTION 1

SOALAN 1

CLO1
C1

(a) State the definition of electric current.
Nyatakan definisi arus elektrik.

[4 marks]
[*4 markah*]

CLO1
C2

(b) Based on a basic circuit, explain Ohm's Law.
Berdasarkan satu litar asas, terangkan Hukum Ohm.

[6 marks]
[*6 markah*]

CLO1
C3

(c) Calculate the total current in the circuit shown in Figure A1(c).
Kirakan jumlah arus bagi litar yang ditunjukkan pada Rajah A1(c).

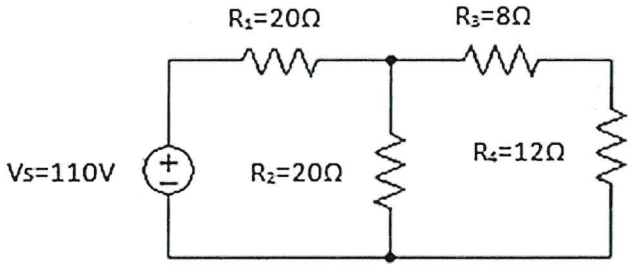

Figure A1 (c)/Rajah A1(c)

[10 marks]
[*10 markah*]

QUESTION 2

SOALAN 2

CLO1
C1

(a) Define a capacitor and list **TWO (2)** types of capacitor.

*Takrifkan pemuat dan senaraikan **DUA (2)** jenis pemuat.*

[4 marks]

[*4 markah*]

CLO1
C2

(b) Based on Figure A2 (b), simplify the circuit with capacitors as below.

Merujuk kepada Rajah A2 (b), permudahkan litar dengan pemuat seperti di bawah.

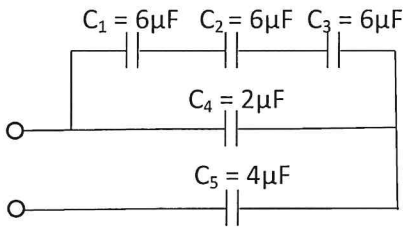

Figure A2 (b) / *Rajah A2 (b)*

[6 marks]

[*6 markah*]

CLO1
C3

(c) A capacitor with a capacitance of 20μF which is connected in series to a 200kΩ resistor is being placed with a 250V DC voltage supply. Calculate the initial current, initial potential difference across capacitor, the time constant during charging and the energy stored in the capacitor.

Suatu pemuat 20μF disambung sesiri dengan perintang 200kΩ dan ditempatkan merentasi bekalan voltan AT 250V. Kirakan arus permulaan, beza keupayaan permulaan merentasi pemuat, pemalar masa semasa mengecas dan tenaga yang disimpan dalam pemuat.

[10 marks]

[*10 markah*]

QUESTION 3

SOALAN 3

CLO1 C1

(a) Describe the construction of an inductor.

Huraikan pembinaan pearuh.

[4 marks]

[*4 markah*]

CLO1 C2

(b) Explain the induced e.m.f is the product of self-inductance.

Terangkan dge aruhan yang terhasil adalah dari aruhan kendiri.

[6 marks]

[*6 markah*]

CLO1 C3

(c) Sketch the complete graph of the rise and the fall of the current versus time of an inductor.

Lakarkan graf kenaikan dan kejatuhan arus melawan masa bagi suatu pearuh.

[10 marks]

[*10 markah*]

QUESTION 4

SOALAN 4

CLO1 C1

(a) State **FOUR (4)** characteristics of magnetic field / flux lines.

*Nyatakan **EMPAT (4)** ciri medan magnet / garisan fluks.*

[4 marks]

[*4 markah*]

CLO1 C2

(b) Explain the Faraday's First Law and Faraday's Second Law with a suitable diagram.

Terangkan Hukum Faraday's Pertama dan Hukum Faraday's Kedua dan lukiskan gambarajah yang bersesuaian.

[6 marks]

[*6 markah*]

CLO1
C3

(c) A steel magnet circuit has a uniform cross-sectional area of $5cm^2$ and length of 25cm. A coil of 120 turns is wound uniformly over the magnetic circuit. When the current in the coil is 1.5A, the total flux is 0.3mWb. Based on this condition, calculate magnetic field strength and the relative permeability of steel.

Sebuah litar magnet keluli yang panjangnya 25cm mempunyai keratan rentas seragam sebanyak $5cm^2$. Sebanyak 120 lilitan gegelung dililitkan secara seragam pada litar tersebut. Apabila arus sebanyak 1.5A dialirkan pada litar didapati jumlah fluks 0.3mWb telah terhasil. Berdasarkan keadaan ini, kirakan kekuatan medan magnet dan kebolehtelapan relatif bagi keluli.

[10 marks]
[*10 markah*]

SECTION B: 20 MARKS
BAHAGIAN B: 20 MARKAH

INSTRUCTION:
This section consists of **ONE (1)** essay questions. Answer **ALL** questions

ARAHAN:
*Bahagian ini mengandungi **SATU (1)** soalan esei. Jawab **SEMUA** soalan.*

QUESTION 1

SOALAN 1

CLO1
C3

Using the Kirchoff's Law, calculate each current I_1, I_2 and I_3 that is flowing through the circuit shown in Figure C1.

Menggunakan Hukum Kirchoff, kirakan arus I_1, I_2 dan I_3 yang mengalir dalam litar pada Rajah C1.

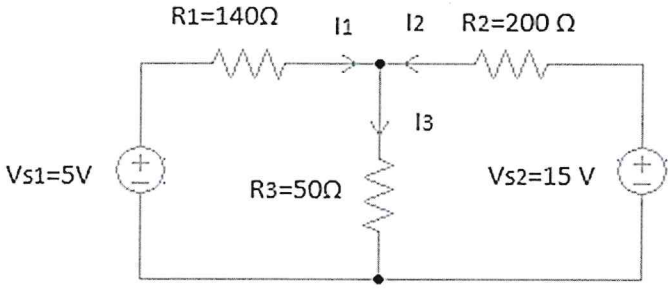

Figure C1/ *Rajah C1*

[20 marks]
[*20 markah*]

SOALAN TAMAT