

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) List **TWO (2)** methods to generate an alternating current.
Senaraikan DUA (2) kaedah untuk menjana arus ulangalik.
- [4 marks]
[4 markah]
- CLO1
C2 (b) Explain briefly Faraday's and Lenz's Law involved in generating an alternating current.
 Terangkan dengan ringkas Hukum Faraday dan Hukum Lenz dalam menjana arus ulang alik
- [6 marks]
[6 markah]
- CLO1
C3 (c) An alternating current voltage is given by $v = 75 \sin(200\pi t - 0.25)$ volt.
 Calculate :
- i. The peak-to-peak voltage value
 - ii. The mean voltage value
 - iii. The time period and frequency
 - iv. The value of the voltage when $t = 8$ ms
- Satu persamaan voltan arus ulang alik adalah $v = 75 \sin(200\pi t - 0.25)$ volt.*
- Kirakan:*
- i. Nilai voltan puncak ke puncak
 - ii. Nilai voltan purata
 - iii. Nilai tempoh masa dan frekuensi
 - iv. Nilai voltan apabila $t = 8$ ms
- [10 marks]
[10 markah]

QUESTION 2**SOALAN 2**

- CLO1
C2 (a) With the aid of an appropriate diagram, explain the effects of changing frequency to RLC series circuit.

Dengan bantuan gambarajah yang sesuai, terangkan kesan perubahan frekuensi terhadap litar siri RLC.

[5 marks]
[5 markah]

- CLO1
C2 (b) Express the resonant frequency equation for RLC series circuits.
Terbitkan persamaan bagi frekuensi salun untuk litar siri RLC.

[5 marks]
[5 markah]

- CLO1
C3 (c) A coil of inductance 100mH is connected in series with a capacitance of 2 μ F and a resistance of 10 Ω across a 240V, variable frequency supply. Calculate the resonant frequency, the current at resonance, voltages across inductor and capacitor at resonance and Q-factor of the circuit.

Satu gegelung pearuh 100mH disambungkan secara siri dengan pemuat 2 μ F dan perintang 10 Ω merintangi bekalan voltan 240V, frekuensi boleh ubah. Kira frekuensi salun, arus ketika salun, voltan merintangi pearuh dan pemuat ketika salun dan faktor-Q dalam litar.

[10 marks]
[10 markah]

QUESTION 3**SOALAN 3**CLO1
C1(a) List **FOUR (4)** types of transformer.*Senaraikan EMPAT (4) jenis pengubah.*

[4 marks]

[4 markah]

CLO1
C2(b) Outline **SIX (6)** characteristics of an ideal transformer.*Kenal pasti ENAM (6) ciri pengubah unggul.*

[6 marks]

[6 markah]

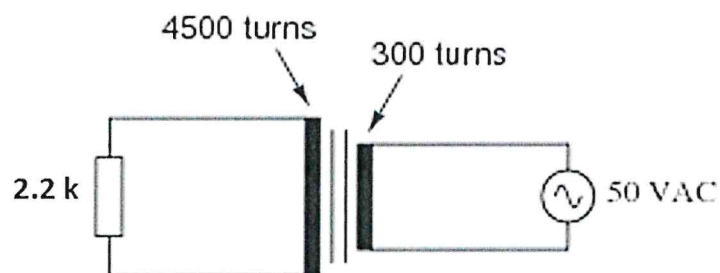
CLO1
C3(c) Referring to Figure A3 (c), calculate V_P , V_S , I_P and I_S .*Merujuk Rajah A3(c), kirakan V_P , V_S , I_P dan I_S .*

Figure A3(c) / Rajah A3

[10 marks]
[10 markah]

QUESTION 4**SOALAN 4**CLO1
C1(a) List **FOUR (4)** advantages of a three phase system.*Senaraikan EMPAT (4) kelebihan bagi sistem tiga fasa.*

[4 marks]

[4 markah]

CLO1
C2

(b) With the aid of a diagram, detail the circuit diagram for three phase system in STAR connection.

Dengan bantuan gambarajah, perincikan rajah litar bagi sistem tiga fasa sambungan BINTANG.

[6 marks]

[6 markah]

CLO1
C3(c) A three-phase load are supplied with line voltage 415V and frequency 50Hz. Each phase consists of 15Ω resistor and connected in series with inductor, 0.05H in DELTA connection. Calculate the phase and line current.*Sebuah beban tiga fasa dibekalkan dengan voltan talian 415V dan frekuensi 50Hz. Setiap fasa terdiri daripada perintang 15Ω yang disambung secara sesiri dengan induktor 0.05H dalam sambungan DELTA. Tentukan nilai arus fasa dan arus talian.*

[10 marks]

[10 markah]

SECTION B : 20 MARKS
BAHAGIAN B : 20 MARKAH

INSTRUCTION:

This section consists of **ONE (1)** essay questions. Answer the question.

ARAHAN:

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

QUESTION 1
SOALAN 1

CLO1
C3

A circuit consist of a resistor connected in series with a capacitor and true power 100W at a power factor of 0.5 and voltage supply 240V, 50Hz. Calculate current flowing in the circuit, the phase angle, the resistance value, the total impedance, the capacitance value, the potential difference at each component and draw the voltage phasor diagram.

Satu litar yang mengandungi perintang yang disambung secara siri dengan pemuat dan mempunyai kuasa sebenar 100W pada faktor kuasa 0.5 dan voltan bekalan 240V, 50Hz. Kirakan arus yang mengalir dalam litar, sudut fasa, nilai perintang, jumlah galangan, nilai kemuatan, beza upaya pada setiap komponen dan lukis gambarajah fasa bagi voltan.

[20 marks]

[20 markah]

SOALAN TAMAT