

CLO1
C2

9. The maximum current for any JFET occurs when

Arus maksimum untuk JFET berlaku apabila

- A. $V_{GS} > 0$
 B. $V_{GS} < 0$
 C. $V_{GS} = 0$
 D. None of the above
Tiada satu pun di atas

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10. TRIAC has _____ terminals.

TRIAK mempunyai _____ terminal.

- A. 2 or 3
2 atau 3
 B. 2
 C. 3 or 4
3 atau 4
 D. 3

SECTION B: 60 MARKS

BAHAGIAN B: 60 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 **THREE (3)** characteristics of semiconductor.*Nyatakan TIGA (3) kriteria bagi separuh pengalir.*

[3 marks]

[3 markah]

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(b) Explain how to produce N type semiconductor.

Bincangkan bagaimana separuh pengalir jenis N dapat dihasilkan.

[5 marks]

[5 markah]

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(c) Illustrate with suitable diagram, the condition of P-N junction in forward bias and reverse bias.

Ilustrasikan dengan gambarajah yang sesuai kepada simpang P-N semasa voltann pincang depan dan voltann pincang belakang.

[7 marks]

[7 markah]

QUESTION 2

SOALAN 2

- CLO1
C1 (a) Draw the schematic symbol for Enhancement-mode N-Channel and P-Channel MOSFET.
Lukiskan symbol skematik bagi Enhancement-mode N-Channel dan P-Channel MOSFET.

[3 marks]

[3 markah]

- CLO2
C2 (b) Differentiate FIVE (5) characteristic between FET and BJT.
Bezakan LIMA (5) ciri di antara FET dan BJT.

[5 marks]

[5 markah]

- CLO2
C3 (c) Illustrate the NMOS circuit as switches (using open and closed switch).
Ilustrasikan litar NMOS sebagai suis (menggunakan suis terbuka dan tertutup).

[7 marks]

[7 markah]

QUESTION 3

SOALAN 3

- CLO1
C2 (a) Describe the types of feedback.
Terangkan jenis suap balik.

[3 marks]

[3 markah]

- CLO2
C3 (b) Illustrate TWO (2) methods of coupling multistage amplifier.
Lukiskan DUA(2) kaedah gandingan penguat berbilang berperingkat.

[6 marks]

[6 markah]

- CLO2
C3 (c) A multistage amplifier consists of three stages. The voltage gains of each stage are $A_{V1}=60$, $A_{V2} = 100$ and $A_{V3} =160$. Calculate the overall voltage gain in dB.
Sebuah penguat pembilang berperingkat mempunyai tiga peringkat. Gandaan voltan setiap peringkat adalah $A_{V1}=60$, $A_{V2} = 100$ dan $A_{V3} =160$. Kirakan gandaan voltan keseluruhan dalam dB.

[6 marks]

[6 markah]

QUESTION 4
SOALAN 4

- CLO1
C1 (a) Draw the schematic symbols of SCR, TRIAC and DIAC.
Lukis simbol skematik bagi SCR, TRIAC dan DIAC.
- [3 marks]
[3 markah]
- CLO1
C3 (b) Draw the complete IV characteristics curve of UJT.
Lukiskan lengkung ciri-ciri IV yang lengkap bagi UJT.
- [5 marks]
[5 markah]
- CLO2
C3 (c) Sketch a lamp dimmer circuit with AC supply 220V using components $R_1 = 4.7K\Omega$, potentiometer $VR_1 = 100K\Omega$, $C_1 = 0.1\mu F$, TRIAC, DIAC and lamp.
Lakarkan litar pemalap lampu dengan bekalan au 220V menggunakan komponen $R_1 = 4.7K\Omega$, meter upaya $VR_1 = 100K\Omega$, $C_1 = 0.1\mu F$, TRIAC, DIAC dan lampu.
- [7 marks]
[7 markah]

SECTION C: 30 MARKS
BAHAGIAN C: 30 MARKAH

INSTRUCTION:

This section consists of **TWO (2)** essay questions. Answer **ALL** questions.

ARAHAN:

Bahagian ini mengandungi **DUA (2)** soalan esei. Jawab **SEMUA** soalan.

QUESTION 1
SOALAN 1

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Referring to the circuit on Figure C1, given $V_{BB}=V_{CC} = 20V$, $R_{in} = 600K\Omega$, $R_L = 2K\Omega$ and $\beta = 200$ by assuming that a silicon is used. Calculate V_{be} , I_b , I_c , V_{ce} , saturation current and cut off voltage,

Merujuk kepada litar dalam Rajah C1, jika diberi $V_{BB} = V_{CC} = 20V$, $R_{in} = 600K\Omega$, $R_L = 2K\Omega$ dan $\beta = 200$ dengan menganggap transistor silikon digunakan. Kira V_{be} , I_b , I_c , V_{ce} , arus tepu dan voltan takat alih.

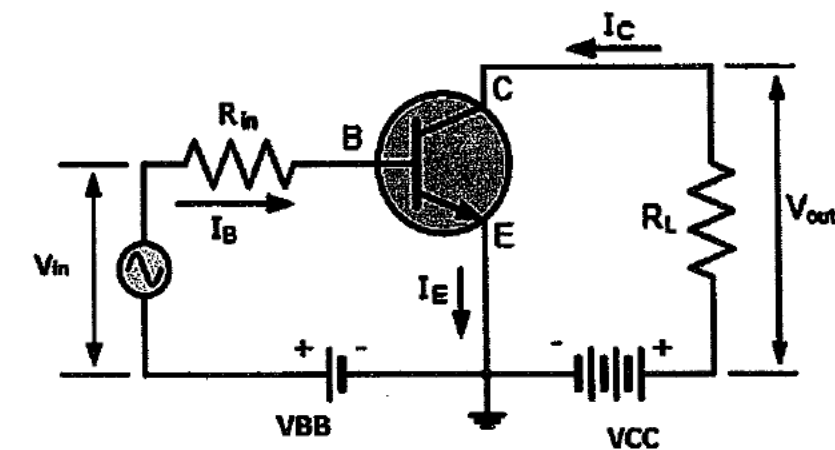


Figure C1 / Rajah C1

[15 marks]
[15 markah]

QUESTION 2

SOALAN 2

CLO2
C3

A Full Wave Rectifier Centre Tapped operated using two silicone diodes. Sketch the circuit and explain its operation. Draw the input and output voltages waveforms. *Satu Penerus Gelombang Penuh Sadap Tengah beroperasi menggunakan dua buah diod silikon .Lakarkan litar tersebut dan terangkan kendalian litar itu. Lukiskan gelombang masukan dan keluaran voltan.*

[15 marks]

[15 markah]

SOALAN TAMAT