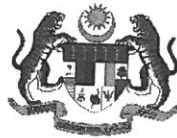


SULIT



KEMENTERIAN PENDIDIKAN TINGGI
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI

BAHAGIAN PEPERIKSAAN DAN PENILAIAN
JABATAN PENDIDIKAN POLITEKNIK DAN KOLEJ KOMUNITI
KEMENTERIAN PENDIDIKAN TINGGI

JABATAN TEKNOLOGI KIMIA DAN MAKANAN

PEPERIKSAAN AKHIR

SESI II : 2024/2025

DMT20313 : CHEMISTRY 2

TARIKH : 20 MEI 2025

MASA : 2.30 PETANG – 4.30 PETANG (2 JAM)

Kertas ini mengandungi **SEMBILAN (9)** halaman bercetak.

Struktur (4 soalan)

Dokumen sokongan yang disertakan : Tiada

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

SULIT

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

- (a) Identify the half equation that represents the oxidation reaction and reduction reaction in Diagram 1(a).

Kenalpasti persamaan separuh yang mewakili tindak balas pengoksidaan dan tindakbalas penurunan dalam Rajah 1(a).



Diagram 1(a)/ Rajah 1(a)

[2 marks]

[2 markah]

CLO1

- (b) Diagram 1(b) shows the imbalance ionic equation. Rewrite the complete balanced equation in Diagram 1(b).

Rajah 1(b) menunjukkan persamaan ion tidak seimbang. Tulis semula cara melengkapkan persamaan seimbang dalam Rajah 1(b).



Diagram 1(b)/ Rajah 1(b)

[6 marks]

[6 markah]

CLO1

(c)



- i. Calculate the oxidation number of atom manganese (Mn) in ion MnO_4^- .
(Oxidation number : H= 1, O = -2,)

*Kirakan nombor pengoksidaan atom mangan (Mn) di dalam ion MnO_4^-
(Nombor pengoksidaan : H= 1, O = -2*

[4 marks]

[4 markah]

- ii. Calculate the oxidation number of atom carbon (C) in ion $\text{C}_2\text{O}_4^{2-}$ and in molecule CO_2 (Oxidation number : H= 1, O = -2,)

Kirakan nombor pengoksidaan carbon atom (C) di dalam ion $\text{C}_2\text{O}_4^{2-}$ dan sebatian CO_2 . Nombor pengoksidaan : H= 1, O = -2).

[9 marks]

[9 markah]

- iii. Find the substance that undergoes oxidation reaction with reason.

Carikan sebatian yang mengalami tindakbalas pengoksidaan beserta alasan.

[4 Marks]

[4 Markah]

QUESTION 2**SOALAN 2**

CLO1

- (a) Indicate **THREE (3)** factors that affect the rate of reaction.

*Nyatakan **TIGA (3)** faktor yang mempengaruhi kadar tindak balas.*

[3 marks]

[3 markah]

CLO1

- (b) Explain the effect of catalyst, total surface area and concentration on the rate of reaction.

Terangkan kesan pemangkin, jumlah luas permukaan dan pemangkin untuk kadar tindak balas.

[6 marks]

[6 markah]

CLO1

- (c) At equilibrium and temperature 25 °C , the concentrations of the compounds in the equation are $[H_2] = 0.50 \text{ M}$, $[O_2] = 1.20 \text{ M}$ and $[H_2O] = 0.90 \text{ M}$.

Pada keseimbangan dan suhu 25 °C , kepekatan sebatian dalam persamaan ialah $[H_2] = 0.50 \text{ M}$, $[O_2] = 1.20 \text{ M}$ dan $[H_2O] = 0.90 \text{ M}$.



- i. Calculate the equilibrium constant, K_c for the reaction.

Kirakan pemalar keseimbangan , K_c bagi tindak balas tersebut.

[10 marks]

[10 markah]

- ii. Explain how increasing the temperature affects the rate of a chemical reaction, referring to the collision theory.

Terangkan bagaimana peningkatan suhu mempengaruhi kadar tindak balas kimia dengan merujuk kepada teori pelanggaran.

[6 marks]

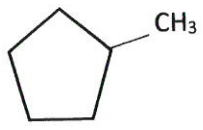
[6 markah]

QUESTION 3

SOALAN 3

CLO1

- (a) Identify homologues series for the compound.
Kenalpasti siri homolog bagi sebatian berikut.

Organic Compound / Sebatian organik	Homologous Series / Siri homolog
$\text{CH}_3\text{CH}_2\text{C}=\text{CH}_2$	
$\begin{array}{c} \text{Cl} \\ \\ \text{CH}_3\text{CCH}_2\text{CH}_2\text{Br} \\ \\ \text{OH} \end{array}$	
$\begin{array}{c} \text{CH}_3 \\ \\ \text{HOOC}-\text{C}-\text{COOH} \\ \\ \text{CH}_3 \end{array}$	
$\begin{array}{c} \text{CH}_3 \quad \text{H} \\ \quad \quad \\ \text{H}_3\text{C}-\text{C}-\text{CH}_2-\text{C}=\text{O} \end{array}$	
	

[5 marks]

[5 markah]

CLO1

- (b) Diagram 3(b) shows the structure of an organic compound. Classify each of the following carbon and hydrogen as primary (1°), secondary (2°), tertiary (3°) or quaternary (4°) carbon.

Rajah 3(b) menunjukkan struktur untuk satu sebatian organik. Klasifikasikan setiap karbon dan hidrogen berikut sebagai karbon premier (1°), sekunder (2°), tertier (3°) atau kuantenari (4°).

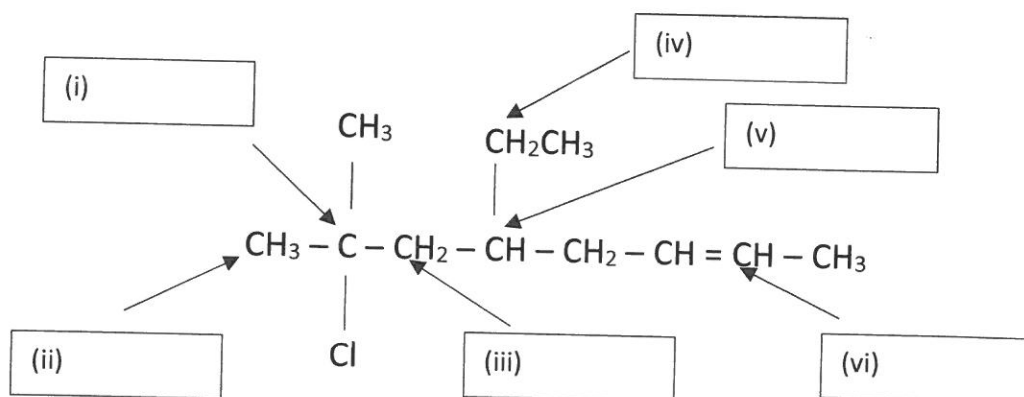


Diagram 3(b) / Rajah 3 (b)

[6 marks]

[6 markah]

CLO1

- (c) Drawing up the organic compounds below into a skeletal structure.

Lukiskan sebatian-sebatian organik berikut kepada struktur skeletal.

- i. 1-bromo-3-methylbutane
1-bromo-3-metilbutana

[4 marks]

[4 markah]

- ii. 3-bromo-1-chlorocyclohexene
3-bromo-1-klorosikloheksena

[5 marks]

[5 markah]

- iii. 2,4-dimethyl-1,3-pentadiene
2,4-dimetil-1,3-pentadiena

[5 marks]

[5 markah]

QUESTION 4**SOALAN 4**

CLO1

- (a) Diagram 4(a) shows the structure of morphine. Identify **FOUR (4)** functional groups of the Morphine.

Rajah 4(a) menunjukkan struktur kimia Morpin, Kenalpasti EMPAT (4) kumpulan berfungsi untuk struktur Morpin.

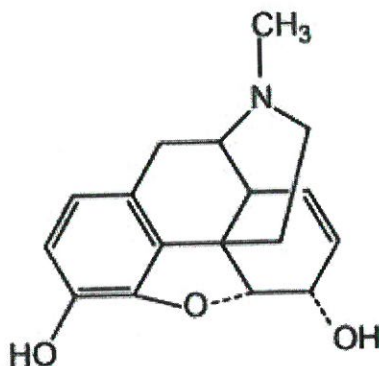


Diagram 4 (a) : Structure of Morphine

Rajah 4 (a) : Struktur Morphine

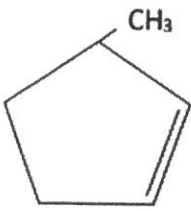
[4 marks]

[4 markah]

CLO1

- (b) Express the names for the following compounds based on the IUPAC nomenclature system.

Zahirkan nama-nama bagi sebatian berikut mengikut sistem penamaan IUPAC.

Compound / <i>Sebatian</i>	IUPAC name of compound/ <i>Nama IUPAC sebatian</i>
$\begin{array}{c} \text{CH}_3 - \text{CH} - \text{CH} - \text{C} = \text{CH}_2 - \text{CH}_3 \\ \\ \text{CH}_3 \end{array}$	
	
$\begin{array}{c} \text{Br} \\ \\ \text{CH}_3 - \text{CH} - \text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{COOH} \end{array}$	
	

[8 marks]

[8 markah]

CLO1

(c) Draw the structural formula for the following compounds.

Lukiskan formula struktur bagi sebatian berikut.

i. 2,4-dimethyl – 3 - hexene

[4 marks]

[4 markah]

ii. 3- bromo – 2 – methyl – 3- cyclopentenol

[4 marks]

[4 markah]

iii. 2,2 – dibromo – 3- isopropylbenzoic acid

[5 marks]

[5 markah]

SOALAN TAMAT