

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 I : 2024/2025**

DMT10013: FUNDAMENTALS OF CHEMISTRY

**TARIKH : 03 DISEMBER 2024
MASA : 2.30 PETANG – 4.30 PETANG (2 JAM)**

Kertas ini mengandungi **ENAM (6)** halaman bercetak.

Subjektif (4 soalan)

Dokumen sokongan yang disertakan : Tiada

JANGAN BUKA KERTAS SOALANINI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

SULIT

INSTRUCTION:

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

ARAHAN:

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

QUESTION 1**SOALAN 1**

- CLO1 (a) Name **THREE (3)** properties of atom and molecules.
*Namakan **TIGA (3)** sifat atom dan molekul.*
- [6 marks]
[6 markah]
- CLO1 (b) Explain the arrangement of particles for solid, liquid and gaseous states.
Terangkan susunan zarah bagi pepejal, cecair dan gas.
- [6 marks]
[6 markah]
- CLO1 (c) A compound consists of 82.66% carbon and 17.34% hydrogen. (Relative Atomic Mass, RAM: C = 12, H = 1).
Satu sebatian mengandungi 82.66 % carbon dan 17.34% hydrogen. (Jisim Atom Relatif, RAM: C= 12, H = 1).
- i. Express the empirical formula of the compound.
Zahirkan formula empirik bagi sebatian tersebut.

	C Element <i>Unsur C</i>	H Element <i>Unsur H</i>
Mass <i>Jisim</i>		
Number of moles (mol = mass/RAM) <i>Bilangan mol (mol = jisim/JAR)</i>		
Simplest ratio <i>Nisbah paling kecil</i>		
Empirical formula <i>Formula empirikal</i>		

[8 marks]
[8 markah]

- ii. If the relative molecular mass is 58, express molecular formula for that compound. Given : (Empirical formula $\times n = 58$)

Jika jisim molekul relativnya adalah 58, zahirkan formula molekul bagi sebatian tersebut. Diberi: (Formula empirikal $\times n = 58$)

[5 marks]
[5 markah]

QUESTION 2

SOALAN 2

CLO1

- (a) Indicate definition of electrovalence, proton number and nucleon number.

Nyatakan definisi elektrovalensi, nombor proton dan nombor nukleon.

[6 marks]
[6 markah]

CLO1

- (b) Explain THREE (3) characteristics of isotope.

Terangkan TIGA (3) ciri-ciri isotop.

[6 marks]
[6 markah]

CLO1

(c)

Table 2 (c)/Jadual 2 (c)

Atom <i>Atom</i>	Proton Number <i>Nombor proton</i>
A	3
B	17
C	18

- i. Illustrate the electron arrangement for atom A and B.

Ilustrasikan susunan elektron untuk atom A dan B.

[5 marks]
[5 markah]

- ii. Using Lewis structure, illustrate the formation of chemical bond that is formed between A and B .

Dengan menggunakan Struktur Lewis, ilustrasikan pembentukan ikatan kimia antara A dan B.

[8 marks]
[8 markah]

QUESTION 3

SOALAN 3

CLO1

- (a) Indicate the definition of redox reaction, reduction reaction and oxidation reaction.

Nyatakan takrifan bagi tindakbalas redoks, tindakbalas penurunan dan tindakbalas pengoksidaan.

[6 marks]
[6 markah]

CLO1

(b)

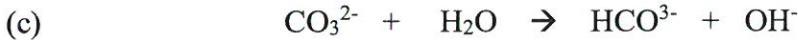


Restate this redox equation to oxidation reaction and reduction reaction.

Nyatakan semula tindakbalas redoks ini kepada tindakbalas pengoksidaan dan tindakbalas penurunan.

[6 marks]
[6 markah]

CLO1



Oxidation number : O = -2, H = +1

- i. Express the oxidation number of atom carbon as in ion CO_3^{2-} and HCO_3^- .

Zahirkan nombor pengoksidaan atom karbon di dalam ion CO_3^{2-} dan HCO_3^-

[7 marks]

[7 markah]

- ii. Express the oxidation number of atom oxygen as in H_2O and ion OH^-

Zahirkan nombor pengoksidaan atom karbon di dalam H_2O and ion OH^-

[6 marks]

[6 markah]

QUESTION 4

SOALAN 4

- CLO1 (a) Identify the base, conjugate acid and conjugate base in the following equation:

Kenal pasti bes, asid konjugat dan bes konjugat dalam persamaan berikut:



[6 marks]

[6 markah]

- CLO1 (b) Explain **THREE (3)** differences between strong base and weak base.

*Terangkan **TIGA (3)** perbezaan antara bes kuat dan bes lemah.*

[6 marks]

[6 markah]

CLO1

- (c) i) Express the pH value of 0.025M NaOH solution.

Zahirkan nilai pH 0.025M larutan NaOH.

$$\text{pOH} = -\log [\text{OH}^-]$$

$$\text{pH} + \text{pOH} = 14$$

[5 marks]

[5 markah]

- ii) Explain **TWO (2)** factors that affect rate of reaction in terms of effective collision.

Terangkan DUA (2) faktor yang mempengaruhi kadar tindakbalas dari segi perlanggaran berkesan.

[8 marks]

[8 markah]

SOALAN TAMAT

