



PEPERIKSAAN PERCUBAAN SPM 2021

KIMIA KERTAS 1

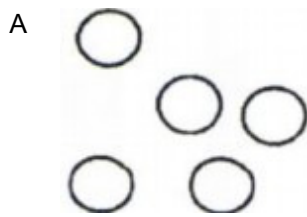
TINGKATAN 5

NAMA :

TINGKATAN :

Arahan : Jawab semua soalan / Answer all questions.

- 1 Rajah manakah menunjukkan daya tarikan antara zarah yang paling kuat?
Which diagram shows the strongest attraction force between the particles?



- 2 Antara berikut, yang manakah adalah satu logam alkali?
Which of the following is an alkali metal?
- | | |
|----------------------------|---------------------------------|
| A Helium
<i>Helium</i> | C Magnesium
<i>Magnesium</i> |
| B Litium
<i>Lithium</i> | D Kalsium
<i>Calsium</i> |
- 3 Antara berikut, yang manakah berlaku dalam tindak balas penurunan?
Which of the following occurs in reduction reaction?
- A Kehilangan oksigen
Loss of oxygen
 - B Kehilangan hidrogen
Loss of hydrogen
 - C Kehilangan elektron
Loss of electrons
 - D Penambahan nombor pengoksidaan
Increase in oxidation number

7 Bahan manakah merupakan asid lemah?

Which substance is a weak acid?

- A Asid nitrik
Nitric acid
- B Asid sulfurik
Sulphuric acid
- C Asid propanoik
Propanoic acid
- D Asid hidroklorik
Hydrochloric acid

8 Antara perbandingan berikut, yang manakah betul mengenai sebatian ionik dan sebatian kovalen?

Which of the following comparison is correct about ionic compounds and covalent compounds?

	Sebatian ionik <i>Ionic compounds</i>	Sebatian kovalen <i>Covalent compounds</i>
A	Mempunyai takat lebur dan didih yang rendah. <i>Have low melting and boiling points</i>	Mempunyai takat lebur dan didih yang tinggi. <i>Have high melting and boiling points.</i>
B	Wujud sebagai pepejal pada suhu bilik <i>Exist as solid at room temperature.</i>	Boleh wujud sebagai pepejal, cecair atau gas pada suhu bilik. <i>May exist as solid, liquid or gas at room temperature.</i>
C	Tidak mengkonduksikan elektrik. <i>Do not conduct electricity.</i>	Mengkonduksikan elektrik dalam larutan akueus atau leburan. <i>Conduct electricity in aqueous solution or molten state.</i>
D	Biasanya larut dalam pelarut organik. <i>Usually dissolve in organic solvents.</i>	Biasanya larut dalam air. <i>Usually dissolve in water.</i>

9 Sebatian manakah yang mempunyai formula yang betul?

Which compound has the correct formula?

	Sebatian <i>Compound</i>	Formula <i>Formula</i>
A	Barium Nitrat <i>Barium Nitrate</i>	$\text{Ba}(\text{NO}_3)_2$
B	Plumbum(II) oksida <i>Lead(II) oxide</i>	PbO_2
C	Kuprum(II) oksida <i>Copper(II) oxide</i>	Cu_2O
D	Argentum karbonat <i>Silver carbonate</i>	AgCO_3

14 Kalium dan natrium adalah dalam kumpulan yang sama dalam Jadual Berkala.

Antara pernyataan berikut, yang manakah benar mengenai kalium?

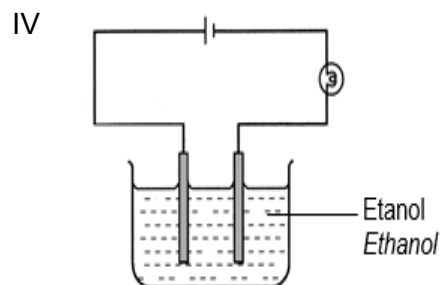
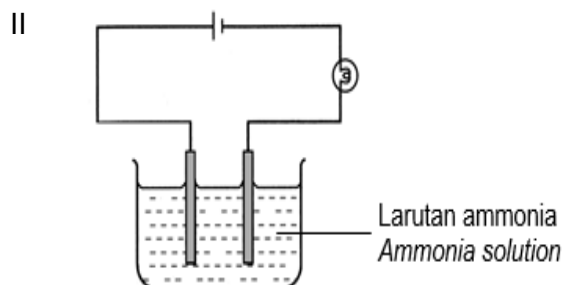
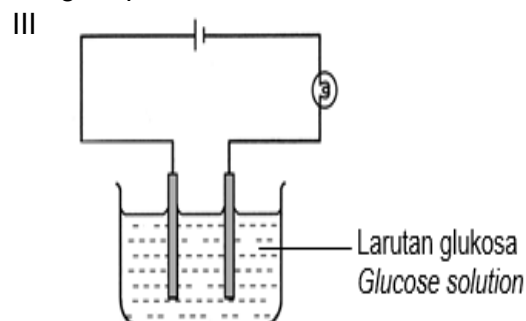
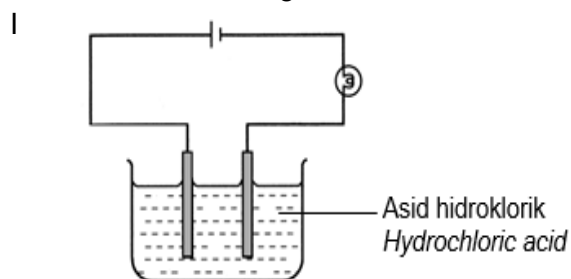
Potassium and sodium are in the same group in the Periodic Table.

Which of the following statements is true about potassium?

- A Kalium bertindak balas lebih cergas dengan air berbanding natrium
Potassium reacts more vigorously with water compared to sodium
- B Kalium mempunyai ketumpatan yang lebih tinggi berbanding natrium
Potassium has a higher density compared to sodium
- C Takat lebur kalium lebih tinggi daripada natrium
The melting point of potassium is higher than that of sodium
- D Kalium kurang elektropositif berbanding natrium
Potassium is less electropositive than sodium

15 Antara litar berikut, yang manakah akan menyalakan mentol?

Which of the following circuit will cause the bulb to light up?



A I dan II / *I and II*

C III dan IV / *III and IV*

B I dan III / *I and III*

D II dan III / *II and III*

16 Formula bagi garam nitrat M ialah MNO_3 . Apakah formula bagi garam fosfat M?

The formula of the nitrate salt of M is MNO_3 . What is the formula of the phosphate salt of M?

- A M_3PO_4
- B M_2PO_4
- C MPO_4
- D $M_2(PO_4)_3$

- 19 Rajah 4 di bawah menunjukkan simbol atom unsur X dan unsur Y.
 Diagram 4 below shows the symbols for the atoms of element X and element Y.



Nyatakan nombor neutron bagi unsur X dan Y.

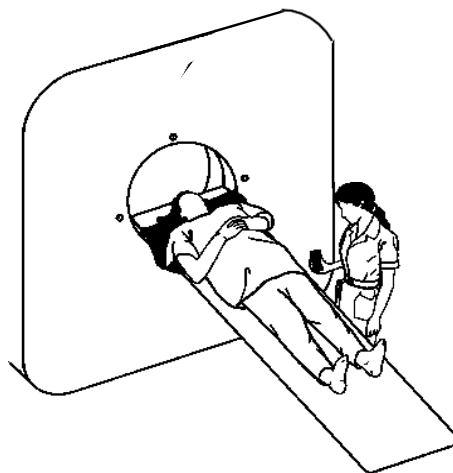
State the number neutrons in an atom of element X and element Y.

	X	Y
A	17	11
B	18	12
C	35	23
D	17	12

- 20 Apakah bilangan atom oksigen dalam 0.1 mol air?
 What is the number of oxygen atom in 0.1 mole of water?
 [Avogadro constant: $6.02 \times 10^{23} \text{ mol}^{-1}$]

- A 6.02×10^{22}
- B 6.02×10^{23}
- C 60.2×10^{23}
- D 3.01×10^{23}

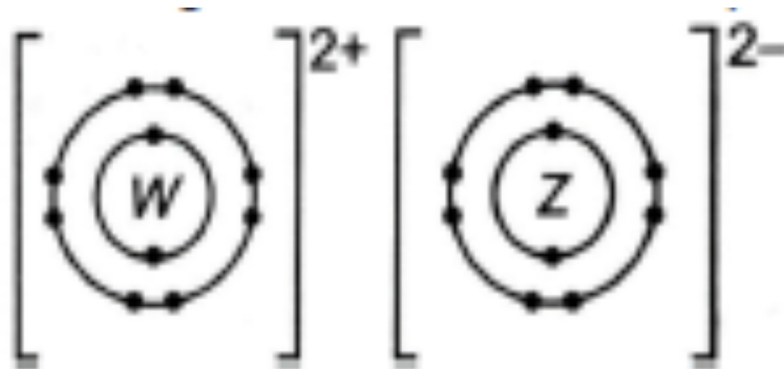
- 21 Rajah 5 menunjukkan terapi Gamma Knife. Sinar gamma yang digunakan untuk membunuh sel kanser dihasilkan oleh suatu isotop.
 Diagram 5 shows Gamma Knife therapy. The gamma radiation used to destroy cancer cells is generated by an isotope.



Apakah nama isotop tersebut? / What is the name for the isotope?

- A Iodine-131 / Iodine -131
- B Kobalt-60 / Cobalt-60
- C Natrium-24 / Sodium-24
- D Karbon-12 / Carbon-12

- 22 Rajah 6 menunjukkan susunan elektron bagi satu sebatian kimia.
Diagram 6 shows the electron arrangement of a chemical compound.



Apakah unsur-unsur yang diwakili oleh W dan Z?
What are the elements represented by W and Z?

	W	Z
A	Natrium <i>Sodium</i>	Oksigen <i>Oxygen</i>
B	Magnesium <i>Magnesium</i>	Oksigen <i>Oxygen</i>
C	Magnesium <i>Magnesium</i>	Fluorin <i>Fluorine</i>
D	Natrium <i>Sodium</i>	Fluorin <i>Fluorine</i>

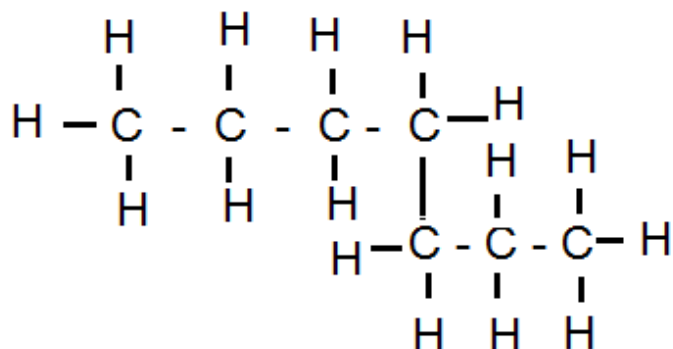
- 23 Persamaan ion berikut menunjukkan perubahan ion Fe^{3+} kepada ion Fe^{2+} .
The following ionic equation shows the change of Fe^{3+} ions to Fe^{2+} ions.



Pernyataan manakah yang benar tentang persamaan tersebut?
Which statement is correct about the equation?

- A Ion Fe^{2+} diturunkan
 Fe^{2+} ion is reduced
- B Ion Fe^{3+} kehilangan elektron
 Fe^{3+} ion loses electron
- C Ion Zn^{2+} dioksidakan
 Zn^{2+} ion is oxidised
- D Zn ialah agen penurunan
Zn is a reducing agent

- 24 Rajah 7 menunjukkan formula struktur bagi suatu sebatian karbon.
Diagram 7 shows the structural formula of a carbon compound.



Apakah nama sebatian karbon tersebut?
What is the name of the carbon compound?

- A Butane
Butane
- B Heptane
Heptane
- C Heksana
Hexane
- D Pentane
Pentane
- 25 Antara yang berikut, yang mana betul tentang alkuna?
Which of the following is correct about alkynes?
- A Sebatian mempunyai kumpulan karboksil.
The compound has carboxyl group.
- B Sebatian mempunyai formula am C_nH_{2n-2} .
The compound has general formula of C_nH_{2n-2} .
- C Sebatian adalah satu hidrokarbon tepu.
The compound is a saturated hydrocarbon.
- D Sebatian mengandungi hanya ikatan tunggal antara atom-atom karbon.
The compound consists of only single bond between carbons atoms.
- 26 Penamaan $CH_3CH_2CH=CH_2$ mengikut IUPAC adalah?
The IUPAC name of $CH_3CH_2CH=CH_2$ is?
- A Prop-1-ena
Prop-1-ene
- B But-1-ena
But-1-ene
- C Butuna
Butyne
- D 3-butena
3-butene

- 27 Rajah 8 menunjukkan unsur-unsur dalam Kala 3 Jadual berkala Unsur
Diagram 8 shows the elements in Period 3 of the Periodic Table of Elements.

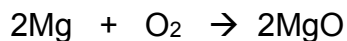
11	12	13	14	15	16	17	18
Na	Mg	Al	Si	P	S	Cl	Ar
23	24	27	28	31	32	35.5	40

Mengapakah saiz atom berkurang daripada natrium kepada Argon dalam kala itu?
Why does the size of the atoms decrease from sodium to argon in the period?

- A Bilangan elektron valens bertambah
The number of valence electrons increases
- B Keelektronegatifan unsur bertambah
The electronegativity of the elements increases
- C Tarikan nukleus terhadap elektron valens dalam petala bertambah
The attraction of the nucleus for the electrons in the shells increases
- D Sifat unsur-unsur berubah dari logam kepada bukan logam
The properties of the elements change from metallic to non-metallic
- 28 Persamaan manakah yang mewakili suatu tindak balas redoks?
Which equation represents a redox reaction?
- A $2\text{KCl} + \text{Pb}(\text{NO}_3)_2 \rightarrow \text{PbCl}_2 + 2\text{KNO}_3$
- B $2\text{HNO}_3 + \text{CaCO}_3 \rightarrow \text{Ca}(\text{NO}_3)_2 + \text{CO}_2 + \text{H}_2\text{O}$
- C $2\text{NaOH} + \text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + \text{H}_2\text{O}$
- D $2\text{AgNO}_3 + \text{Mg} \rightarrow \text{Mg}(\text{NO}_3)_2 + 2\text{Ag}$
- 29 Amin disengat lebah ketika berada di kebun bapanya. Antara berikut, bahan manakah yang sesuai digunakan untuk mengurangkan kesakitan Amin?
Amin was stung by a bee while in his father's garden. Which of the following substance is suitable to reduce Amin's pain?

	Bahan Substance	Nilai pH pH value
A	Minuman ringan <i>Soft drink</i>	4
B	Cuka makan <i>Vinegar</i>	8
C	Serbuk penaik <i>Baking soda</i>	6
D	Serbuk kopi <i>Coffee powder</i>	13

- 30 *Magnesium bertindak balas dengan oksigen membentuk magnesium oksida.
Magnesium reacts with oxygen to form magnesium oxide.*



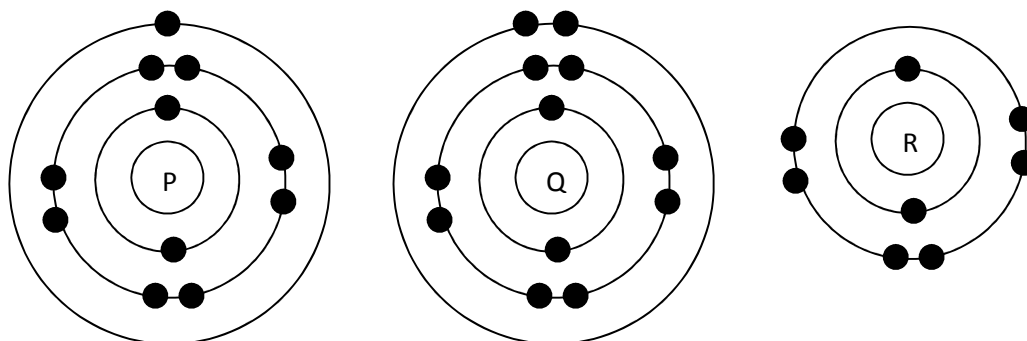
Berapakah jisim magnesium oksida yang terbentuk apabila 2.4 g magnesium bertindak balas dengan oksigen berlebihan?

[Jisim atom relatif: Mg=24 , O=16]

What is the mass of magnesium oxide formed when 2.4 g of magnesium reacts with excess oxygen?

[Relative atomic mass: Mg=24 , O=16]

- A 1.6 g
B 3.6 g
C 4.0 g
D 8.0 g
- 31 Rajah 9 di bawah menunjukkan susunan electron bagi atom P, Q dan R.
The diagram 9 below shows the electron arrangement of atoms P, Q and R.

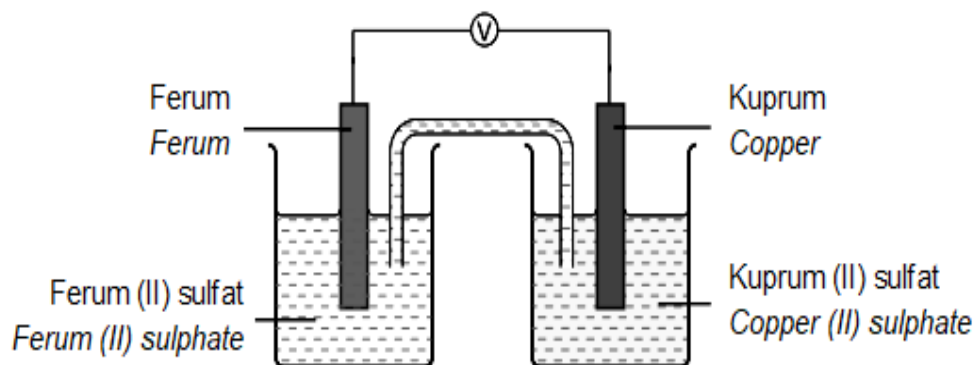


R boleh bertindak balas dengan P dan Q membentuk dua sebatian berbeza. Apakah formula sebatian yang terbentuk?

R can react with P and Q to form two different compounds. What are the formulae of the compounds formed?

	<u>P & R</u>	<u>Q & R</u>
A	P ₂ R	QR ₂
B	P ₂ R	QR
C	PR	QR ₂
D	PR ₂	QR ₂

- 32 Rajah 10 menunjukkan susunan radas bagi suatu sel kimia.
 Diagram 10 shows the apparatus set-up for a voltaic cell.

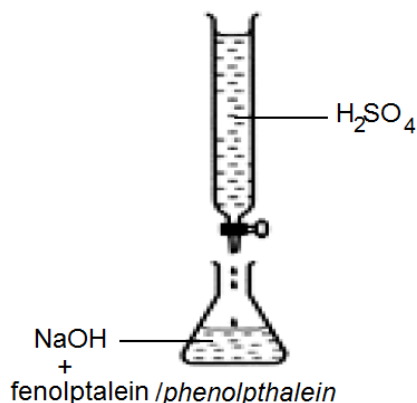
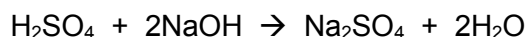


Hitung nilai E° sel bagi sel kimia tersebut jika E° bagi dua sel setengah adalah seperti berikut:

Calculate the E° sel value for this voltaic cell, if E° half cells are:

$\text{Fe}^{2+}(\text{ak}) + 2\text{e}^- \rightleftharpoons \text{Fe}(\text{p})$	-0.44
$\text{Cu}^{2+}(\text{ak}) + 2\text{e}^- \rightleftharpoons \text{Cu}(\text{p})$	+0.34

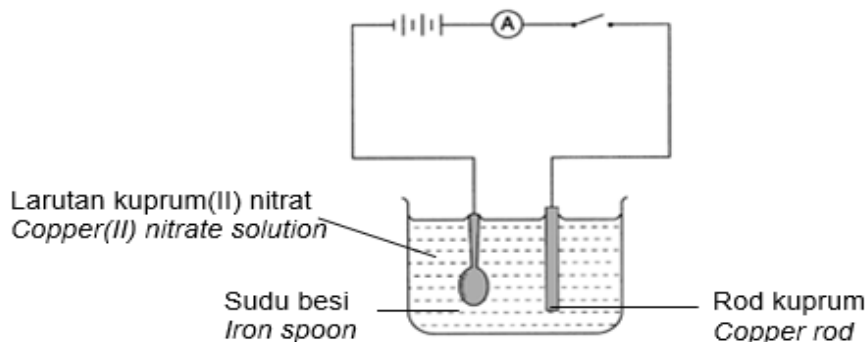
- A -0.1
 B 0.1
 C -0.78
 D 0.78
- 33 Persamaan berikut menunjukkan tindak balas antara natrium hidroksida dengan asid sulfurik.
 The following equation shows the reaction between sodium hydroxide with sulphuric acid.



25 cm³ 1 mol dm⁻³ asid sulfurik meneutralkan 25 cm³ natrium hidroksida.
 Berapakah kemolaran larutan natrium hidroksida?
 25 cm³ 1 mol dm⁻³ of sulphuric acid neutralize 25 cm³ of sodium hydroxide.
 What is the molarity of sodium hydroxide solution?

- A 0.5 mol dm⁻³
 B 1 mol dm⁻³
 C 2 mol dm⁻³
 D 3 mol dm⁻³

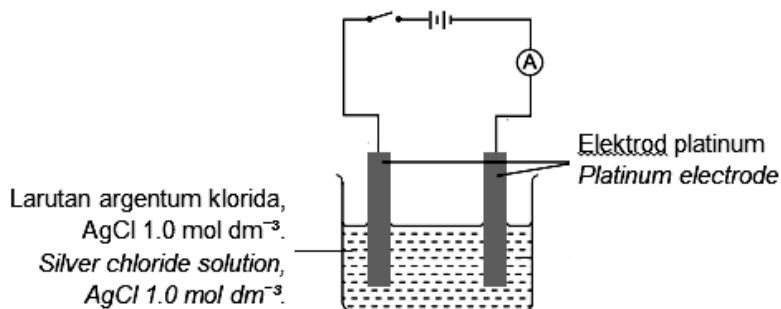
- 34 Satu sudu besi disadur. Radas digunakan ditunjuk dalam rajah 11.
An iron spoon is electroplated. The apparatus used is shown in diagram 11.



Setelah elektrolisis selesai, diperhatikan bahawa..
At the end of the electrolysis, it is observed that...

	Anod Anode	Katod Cathode
A	Enapan perang terbentuk <i>Brown deposits form</i>	Gelembung gas dibebaskan <i>Gas bubbles are released</i>
B	Rod kuprum menipis <i>Copper rod becomes thinner</i>	Enapan perang terbentuk <i>Brown deposits form</i>
C	Enapan perang terbentuk <i>Brown deposits form</i>	Rod kuprum menebal <i>Copper rod becomes thicker</i>
D	Gelembung gas dibebaskan <i>Gas bubbles are released</i>	Rod kuprum menipis <i>Copper rod becomes thinner</i>

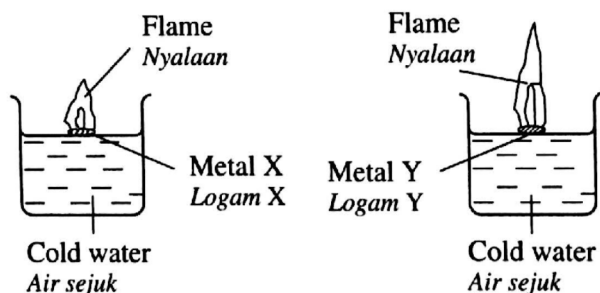
- 35 Rajah 12 menunjukkan elektrolisis bagi larutan argentum klorida, $\text{AgCl } 1.0 \text{ mol dm}^{-3}$.
Diagram 12 shows the electrolysis of silver chloride solution, $\text{AgCl } 1.0 \text{ mol dm}^{-3}$.



Setengah persamaan manakah yang mewakili tindak balas di anod dan di katod?
Which half equation represents the reactions at the anode and the cathode?

	Anod / Anode	Katod / Cathode
A	$2\text{Cl}^- \rightarrow \text{Cl}_2 + 2\text{e}^-$	$2\text{H}^+ + 2\text{e}^- \rightarrow \text{H}_2$
B	$2\text{Cl}^- \rightarrow \text{Cl}_2 + 2\text{e}^-$	$\text{Ag}^+ + \text{e}^- \rightarrow \text{Ag}$
C	$4\text{OH}^- \rightarrow \text{O}_2 + 2\text{H}_2\text{O} + 4\text{e}^-$	$2\text{H}^+ + 2\text{e}^- \rightarrow \text{H}_2$
D	$4\text{OH}^- \rightarrow \text{O}_2 + 2\text{H}_2\text{O} + 4\text{e}^-$	$\text{Ag}^+ + \text{e}^- \rightarrow \text{Ag}$

- 36 Rajah 13 menunjukkan pemerhatian ke atas tindak balas apabila secebis logam X dan logam Y yang sama saiz diletakkan ke dalam bikar yang mengandungi air sejuk.
Diagram 13 shows the observation of a reaction when a piece of metal X and metal Y of the same size are put into a beaker containing cold water.



Antara yang berikut yang manakah menerangkan pemerhatian itu?

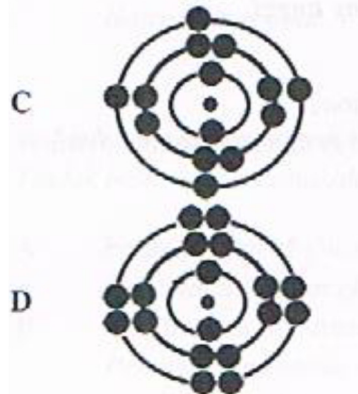
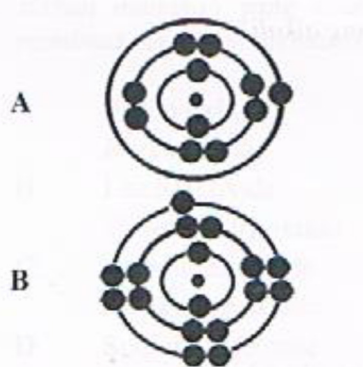
Which of the following explains the observation?

- A Logam Y lebih keras daripada logam X
Metal Y is harder than metal X
- B Logam Y lebih tumpat daripada logam X
Metal Y is denser than metal X
- C Atom logam Y mempunyai lebih banyak proton berbanding atom logam X
The atom of metal Y contains more protons than the atom of metal X
- D Atom logam Y lebih mudah melepaskan elektron berbanding dengan atom logam X
The atom of metal Y releases electron more easily than the atom of metal X
- 37 Maklumat berikut adalah mengenai satu unsur dalam Jadual Berkala.
The following information is about an element in the Periodic Table.

- Terletak pada Kala 3 dalam Jadual Berkala
Located in Period 3 in the Periodic Table
- Bertindak balas dengan air menghasilkan larutan berasid dan agen peluntur
React with water to produce acidic solution and bleaching agent
- Bertindak balas dengan besi panas menghasilkan satu pepejal perang
Reacts with hot iron to produce a brown solid

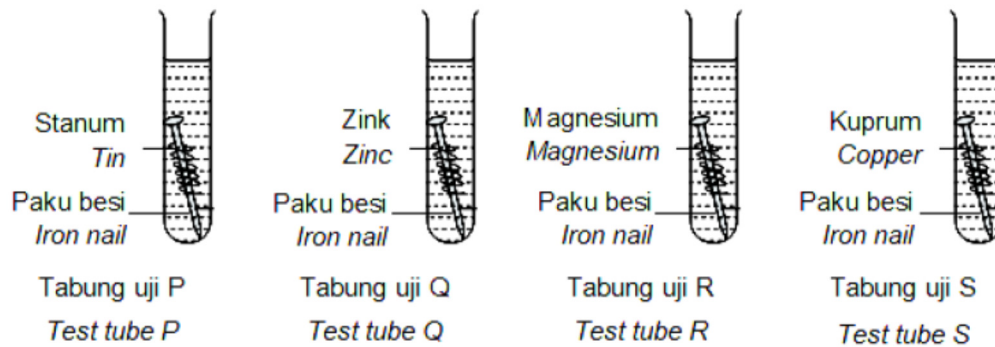
Yang manakah antara berikut menunjukkan susunan elektron bagi unsur itu?

Which of the following shows the electron arrangement of the element?



38 Rajah 14 menunjukkan paku besi yang dililit dengan logam yang berlainan dimasukkan ke dalam tabung uji yang mengandungi campuran agar-agar, larutan kalium heksasianoferrat (III), $K_2Fe(CN)_6$ dan fenolftalein.

Diagram 14 shows an iron nail coated with different metals inserted into a test tube containing a mixture of agar, potassium hexacyanoferrate (III) solution, $K_2Fe(CN)_6$ and phenolphthalein.



Selepas sehari, larutan dalam tabung uji manakah yang bertukar menjadi warna biru?
After a day, solution in which test tube will turn blue?

- I Tabung uji P / Test tube P
 - II Tabung uji Q / Test tube Q
 - III Tabung uji R / Test tube R
 - IV Tabung uji S / Test tube S
- A I dan III / I and III
 - B I dan IV / I dan IV
 - C II dan III / II dan III
 - D II dan IV / II dan IV

39 Jadual 4 menunjukkan maklumat tentang tiga sel kimia
Table 4 shows information about three chemical cell.

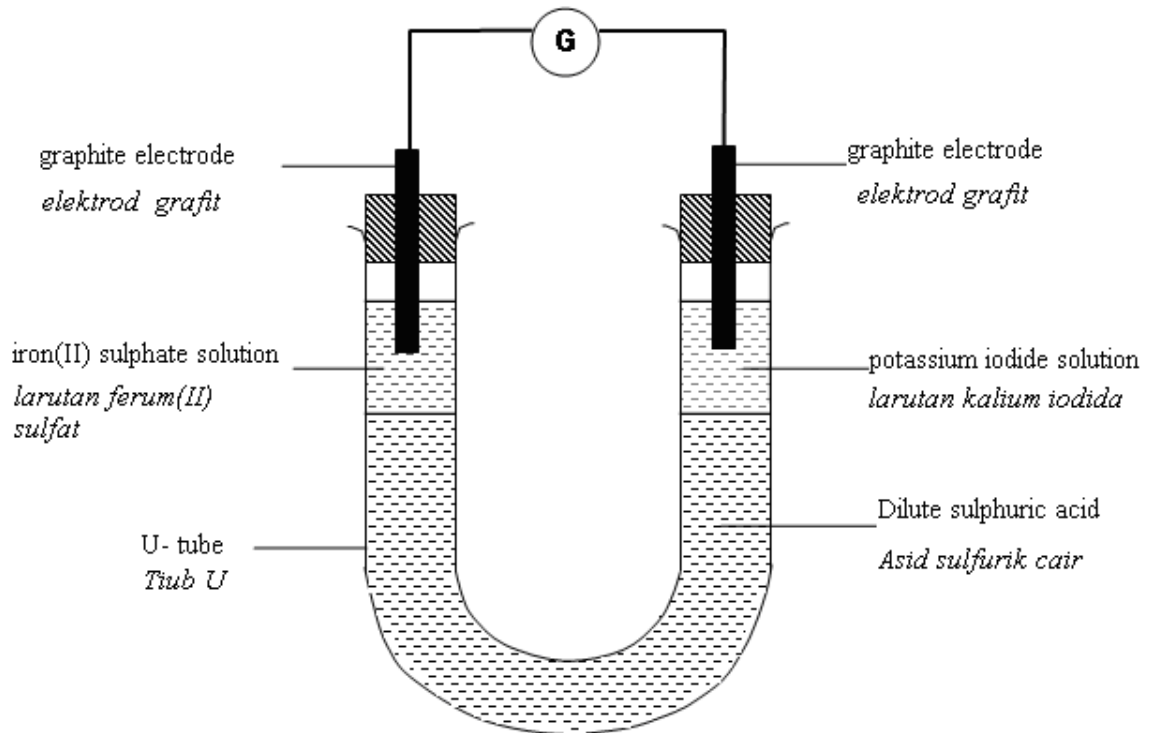
Chemical cell Sel kimia	Pair of metal electrodes Pasangan elektrod logam	Voltage/V Voltan/V	Negative terminal Terminal negatif
I	P,Q	0.15	Q
II	R,Q	1.55	R
III	R,S	2.45	R

Apakah nilai voltan bagi pasangan elektrod logam P dan S?
What is the voltage of the pair of metal electrodes P and S?

- A 0.75 V
- B 1.40 V
- C 1.70 V
- D 2.30 V

40 Diagram 15 menunjukkan susunan radas untuk mengkaji tindak balas antara ferum(II) sulfat dengan larutan kalium iodida.

Diagram 15 shows the apparatus set-up to investigate the reaction of iron(II) sulphate with potassium iodide solution.



Antara yang berikut, yang manakah perubahan warna bagi kedua-dua larutan itu?
Which of the following is the colour change of the two solutions?

	Larutan ferum(II) sulfat Iron(II) sulphate solution	Larutan kalium iodida Potassium iodide solution
A	Hijau kepada perang <i>Green to brown</i>	Tak berwarna kepada perang <i>Colourless to brown</i>
B	Perang kepada hijau <i>Brown to green</i>	Ungu kepada tak berwarna <i>Purple to colourless</i>
C	Perang kepada hijau <i>Brown to green</i>	Jingga kepada hijau <i>Orange to green</i>
D	Hijau kepada perang <i>Green to brown</i>	Jingga kepada hijau <i>Orange to green</i>

~ Stop saying "i wish" but start saying "i will" ~

... Kertas soalan tamat ...

..... END OF QUESTION