

- 1 Seorang pelajar menjalankan eksperimen untuk menentukan kadar keterlarutan garam untuk saiz yang berbeza. Antara radas berikut, yang manakah penting untuk eksperimen tersebut?

A student carries out an experiment to determine the rate of dissolving salt at different size. Which of the following apparatus is essential for the experiment?

- A Kelalang kon
Conical flask
- B Jam randik
Stop watch
- C Mangkuk penyejat
Evaporating dish
- D Penunu Bunsen
Bunsen burner

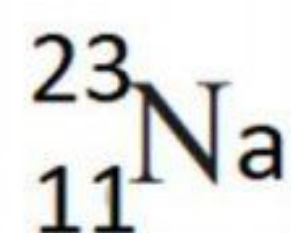
- 2 Antara yang berikut, yang manakah merupakan contoh bagi jirim?

Which of the following is an example of matter?

- A Haba
Heat
- B Cahaya
Light
- C Air
Udara
- D Api
Fire

- 3 Rajah 3 menunjukkan perwakilan piawai bagi natrium-23.

Diagram 3 shows the standard represented for sodium-23.



Rajah / Diagram 3

Antara berikut, yang manakah betul bagi ion Na^+ ?

Which of the following statements is correct for Na^+ ion?

	Bilangan proton <i>Number of protons</i>	Bilangan neutron <i>Number of neutrons</i>	Bilangan elektron <i>Number of electrons</i>
A	11	12	11
B	11	12	10
C	10	13	11
D	12	11	10

- 4 Jadual 1 menunjukkan takat lebur dan takat didih bahan P,Q,R dan S.

Table 1 below shows the melting and boiling points of substances P, Q, R and S.

Bahan <i>Substance</i>	Takat lebur (°C) <i>Melting point (°C)</i>	Takat didih (°C) <i>Boiling point (°C)</i>
P	-75	-15
Q	-20	97
R	35	147
S	5	120

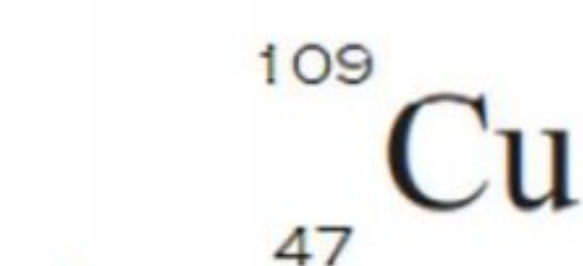
Table / Jadual 1

Bahan yang manakah cecair pada suhu bilik?

Which substances is a liquid at room temperature?

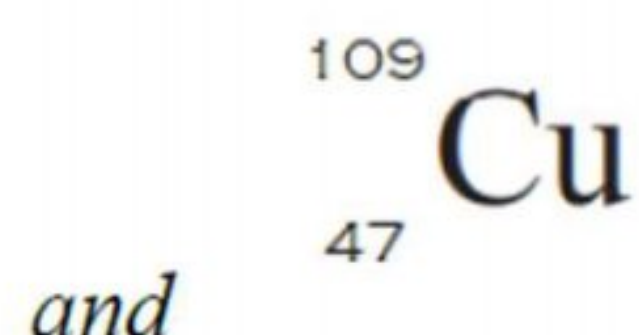
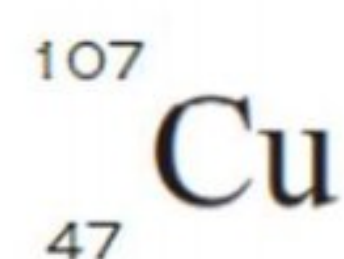
- A Q sahaja
Q only
- B R sahaja
R only
- C Q dan S
Q and S
- D R dan S
R and S

- 5 Unsur X terdiri daripada dua isotop,



dengan peratus kelimpahan 56% dan 44% masing-masing? Apakah jisim atom relatif unsur X?

Element X consists of two isotopes.



that have abundance of 56% and 44% respectively. What is the relative atomic mass of element X?

- A 107.0
B 107.5
- C 107.9
D 109.0
- 6 Karbon-14 adalah isotop bagi karbon. Apakah kegunaan karbon-14?

Carbon-14 is an isotope of carbon. What is the use of carbon-14?

- A Menganggar umur fosil dan artifak
Estimate the age of fossils and artifacts
- B Radioterapi untuk merawat kanser
Radiotherapy for the treatment of cancer
- C Memulihkan degupan jantung pesakit jantung
Regulate the heartbeats of patients with heart problems.
- D Memusnahkan bakteria dalam makanan tanpa mengubah kualiti makanan.
Destroy bacteria in food without changing the quality of food.

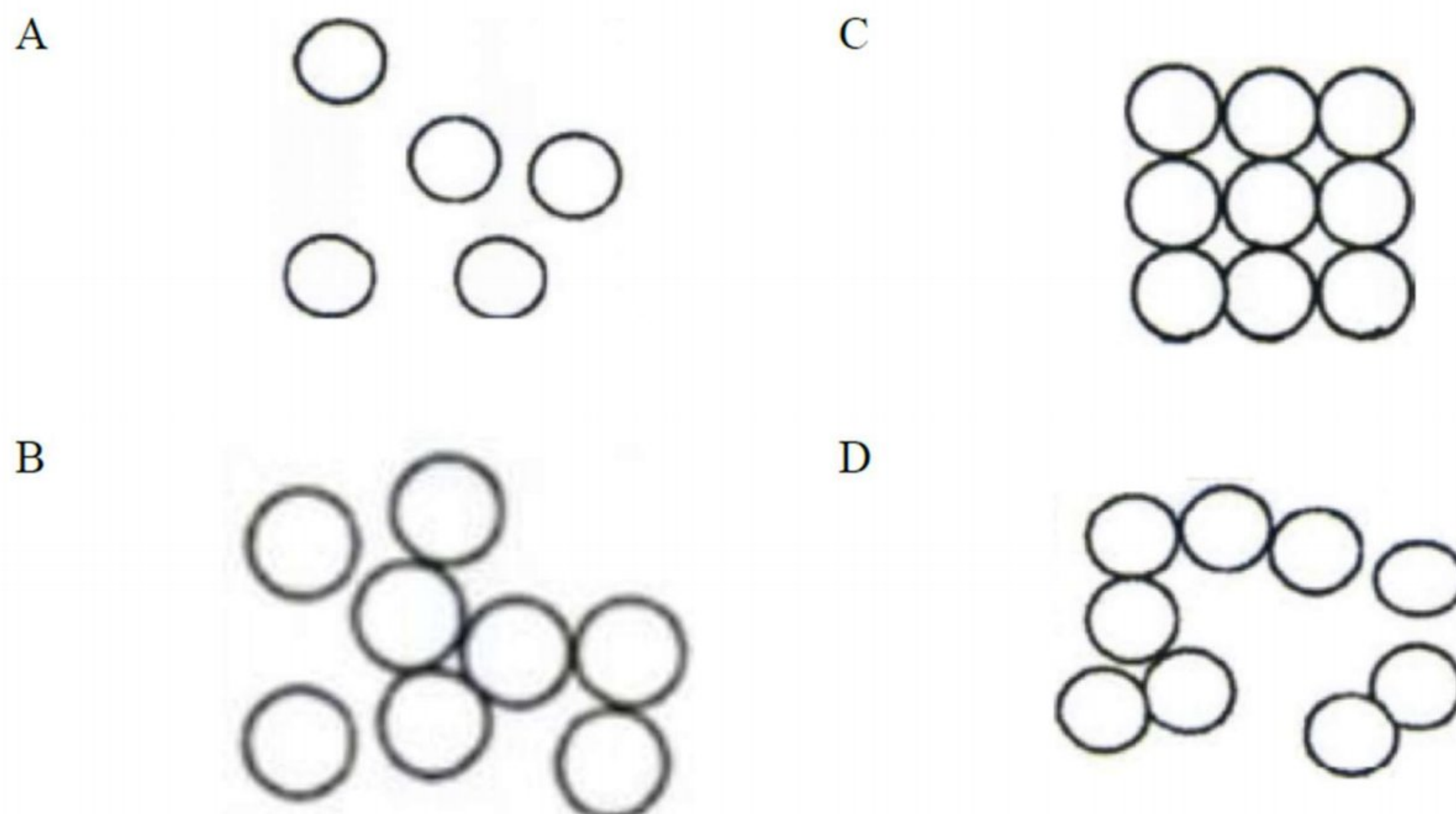
7 Antara berikut, yang manakah pasangan yang betul?

Which of the following pairs are matched correctly?

	Atom <i>Atom</i>	Ion <i>Ion</i>	Molekul <i>Molecule</i>
A	Ammonia <i>Ammonia</i>	Natrium klorida <i>Sodium chloride</i>	Karbon <i>Carbon</i>
B	Magnesium <i>Magnesium</i>	Raksa <i>Merkuri</i>	Karbon dioksida <i>Carbon dioxide</i>
C	Natrium <i>Sodium</i>	Litium oksida <i>Lithium oxide</i>	Bromin <i>Bromine</i>
D	Kuprum(II) sulfat <i>Copper(II) sulphate</i>	Sulfur dioksida <i>Sulphur dioxide</i>	Hidrogen <i>Hydrogen</i>

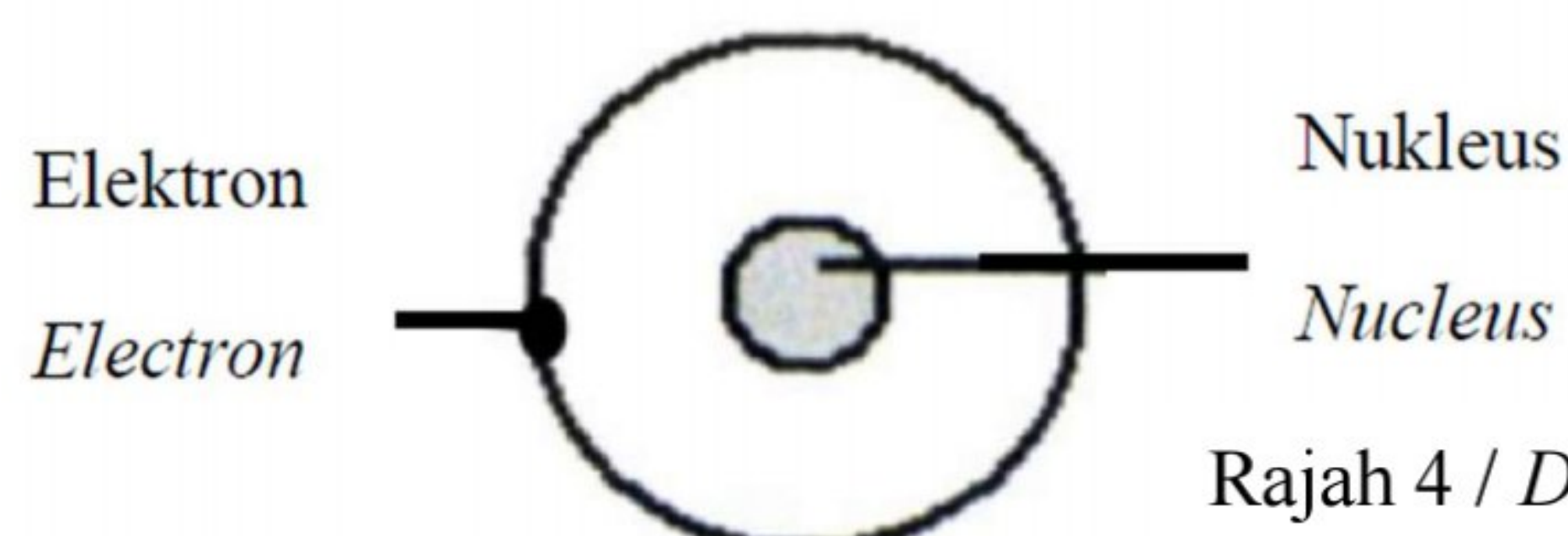
8 Rajah manakah menunjukkan daya tarikan antara zarah yang paling kuat?

Which diagram shows the strongest attraction force between the particles?



9 Rajah 4 menunjukkan struktur atom

Diagram 4 shows the structure of an atom



Rajah 4 / Diagram 4

Apakah zarah-zarah sub atom di dalam nukleus?

What are the subatomic particles in the nucleus ?

A Neutron sahaja

B Proton dan neutron

C Elektron dan proton

D Elektron dan neutron

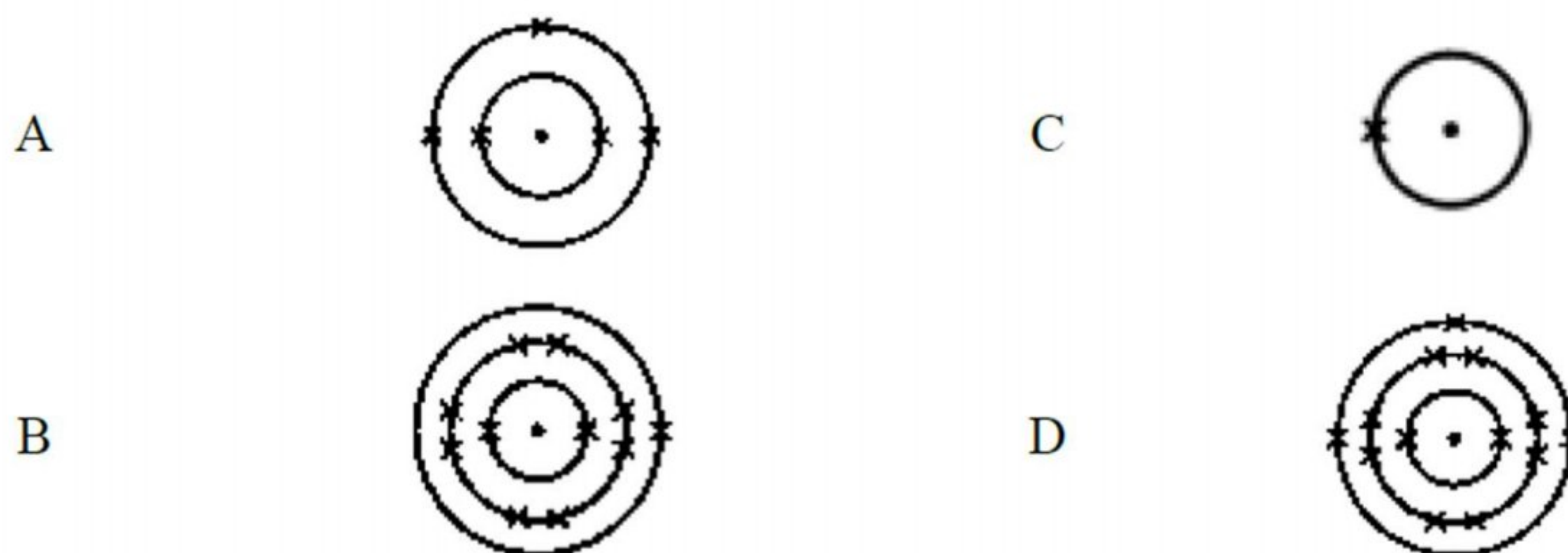
- 10 Maklumat berikut menggambarkan atom Q.

The following information describes atom Q.

- mempunyai 3 proton
has 3 protons
- reacts with cold water
bertindak balas dengan air sejuk

Antara atom yang berikut, yang manakah bertindak balas dengan cara yang serupa dengan atom Q?

Which of the following atoms has similar reaction with atom Q?



- 11 Berapakah jisim fosforus yang mengandungi dua kali ganda bilangan atom yang terdapat dalam 14 g ferum?

[Jisim atom relatif : P = 31; Fe = 56]

What is the mass of phosphorus that contains twice the number of atoms found in 14 g of iron?

[Relative atomic mass : P = 31; Fe = 56]

- A 62.0 g
B 28.0 g
C 15.5 g
D 10.7 g
- 12 Jika 41.4 g unsur P berpadu dengan 6.4 g unsur Q, apakah formula bagi sebatian yang terbentuk?

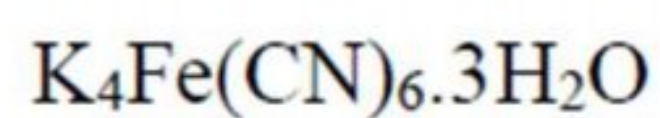
If 41.4 g of element P is combined with 6.4 g of element Q, what is the formula for the compound formed?

Jisim atom relatif : P = 207, Q = 16

Relative atomic mass : P = 207, Q = 16

- | | |
|--------------------|---------------------------------|
| A PQ | C PQ ₂ |
| B P ₂ Q | D P ₂ Q ₃ |

13



Rajah di atas menunjukkan formula kimia bagi kalium heksasianoferrat(III) trihidrat.

Apakah jisim relatif sebatian ini?

[Jisim atom relatif : H = 1; C = 12; N = 14; O = 16; K = 39; Fe = 56]

Diagram above shows the chemical formula of potassium hexacyanoferrate(II) trihydrate. What is the relative mass of this compound?

[Relative atomic mass : H = 1; C = 12; N = 14; O = 16; K = 39; Fe = 56]

- A 141
- B 256
- C 389
- D 422

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Berapakah bilangan atom dalam 0.5 mol gas ammonia, NH_3 ?

[Pemalar Avogadro = $6.02 \times 10^{23} \text{ mol}^{-1}$]

What is the number of atoms in 0.5 mol of ammonia gas, NH_3 ?

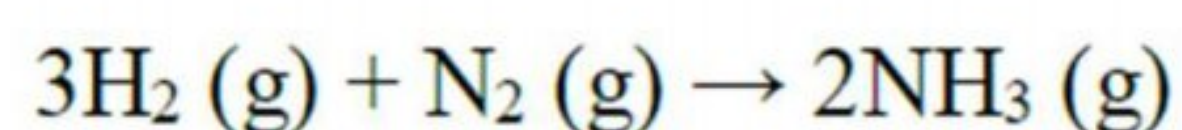
[Avogadro constant = $6.02 \times 10^{23} \text{ mol}^{-1}$]

- A 6.02×10^{23}
- B $0.5 \times 6.02 \times 10^{23}$
- C $0.5 \times 2 \times 6.02 \times 10^{23}$
- D $0.5 \times 4 \times 6.02 \times 10^{23}$

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Persamaan berikut mewakili satu tindak balas.

The following equation represents a reaction.



Apakah jisim molekul relatif bagi hasil tersebut?

[Jisim atom relatif H = 1; N = 14]

What is the relative molecular mass of the product?

[Relative atomic mass of H = 1; N = 14]

- | | |
|------|------|
| A 2 | C 28 |
| B 17 | D 34 |

- 16 Tindak balas antara aluminium dan kuprum(II) oksida boleh diwakili dengan persamaan kimia berikut.

The reaction between aluminum and copper(II) oxide can be represented by the following chemical equation.



Hitung jisim aluminium yang diperlukan untuk tindak balas lengkap dengan 24 g kuprum(II) oksida.

[Jisim atom relatif : Cu = 64; Al = 27; O = 16]

Calculate the mass of aluminum required for a complete reaction with 24 g of copper(II) oxide.

[Relative atomic mass : Cu = 64; Al = 27; O = 16]

- | | |
|---------|----------|
| A 2.7 g | C 8.1 g |
| B 5.4 g | D 10.8 g |

- 17 Jisim molekul relatif bagi $\text{M}_2(\text{SO}_4)_3$ ialah 342.

Berapakah jisim atom relatif bagi unsur M?

[Jisim atom relatif: O = 16, S = 32]

The relative molecular mass of $\text{M}_2(\text{SO}_4)_3$ is 342.

What is the relative atomic mass of element M?

[Relative atomic mass: O = 16, S = 32]

- | | |
|------|-------|
| A 27 | C 118 |
| B 54 | D 123 |

- 18 Antara berikut, zarah manakah yang mengandungi 10 elektron?

[Nombor proton: Ne = 10, Na = 11, K = 19]

Which of the following particles contain 10 electrons?

[Proton number: Ne = 10, Na = 11, K = 19]

I Na^+

II Ne

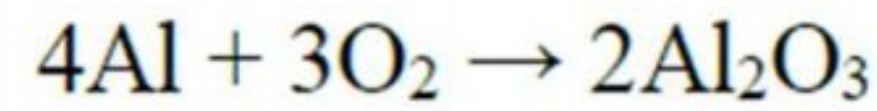
III Na

IV K^+

- | | |
|-------------|--------------|
| A I dan II | C II dan IV |
| B I dan III | D III dan IV |

- 19 Persamaan berikut mewakili tindak balas antara aluminium dan oksigen.

The following equation represents the reaction between aluminium and oxygen.



Antara pernyataan berikut, yang manakah betul?

Which of the following statements is correct?

- A 4 mol atom aluminium bertindak balas dengan 3 mol atom oksigen
4 mol of aluminium atoms react with 3 mol of oxygen atoms
- B 4 mol atom aluminium bertindak balas dengan 3 mol molekul oksigen
4 mol of aluminium atoms react with 3 mol of oxygen molecules
- C 4 mol atom aluminium bertindak balas dengan 3 mol atom oksigen menghasilkan 2 mol aluminium oksida
4 mol of aluminium atoms react with 3 mol of oxygen atoms producing 2 mol of aluminium oxide
- D 4 mol atom aluminium bertindak balas dengan 6 mol molekul oksigen menghasilkan 2 mol aluminium oksida
4 mol of aluminium atoms react with 6 mol of oxygen molecules producing 2 mol of aluminium oxide

- 20 Antara berikut yang manakah benar?

Which of following is true?

	Formula kimia <i>Chemical Formula</i>	Nama <i>Name</i>
I	CaCO_3	Kalsium bikarbonat <i>Calcium bicarbonate</i>
II	MgO	Magnesium oksida <i>Magnesium oxide</i>
III	CO	Karbon oksida <i>Carbon oxide</i>
IV	Fe_2O_3	Ferum(II) oksida <i>Iron(II) oxide</i>

- A I dan II
B II dan III
C II dan IV
D III dan IV

- 21 Antara yang berikut, yang manakah adalah satu gas monoatom?
Which of the following is a monoatomic gas?
- | | |
|-----------------------------|-------------------------------|
| A Argon
<i>Argon</i> | C Hidrogen
<i>Hydrogen</i> |
| B Klorin
<i>Chlorine</i> | D Oksigen
<i>Oxygen</i> |
- 22 Antara unsur Kumpulan 1 berikut, yang manakah mempunyai saiz atom paling kecil?
Which of the following Group 1 elements has the smallest atomic size?
- | | | |
|----------------------------|----------------------------|------------------------------|
| A Litium
<i>Lithium</i> | B Natrium
<i>Sodium</i> | C Kalium
<i>Potassium</i> |
|----------------------------|----------------------------|------------------------------|
- 23 Unsur Z berada dalam kumpulan yang sama dengan kalium dalam Jadual Berkala. Antara pernyataan berikut, yang manakah sifat kimia bagi unsur Z?
Element Z is located in the same group as potassium in the Periodic Table. Which of the following statements are chemical properties of element Z?
- I Bertindak balas dengan air untuk menghasilkan larutan bersifat alkali
Reacts with water to produce an alkaline solution
- II Bertindak balas dengan oksigen untuk menghasilkan pepejal hitam
Reacts with oxygen to produce a black solid
- III Bertindak balas dengan gas klorin untuk menghasilkan pepejal putih
Reacts with chlorine gas to produce a white solid
- IV Bertindak balas dengan larutan natrium hidroksida untuk menghasilkan larutan bersifat asid
Reacts with sodium hydroxide solution to produce an acidic solution
- | | |
|-------------|--------------|
| A I dan III | C II dan III |
| B I dan IV | D II dan IV |
- 24 Ciri manakah yang **betul** tentang unsur-unsur dalam Kumpulan 17 dalam Jadual Berkala apabila menuruni kumpulan?
*Which characteristic is **correct** about elements in Group 17 in the Periodic Table as going down the group?*
- A Keamatan warna berkurang
The intensity of colour decreases
- B Kecenderungan menerima elektron berkurang
The tendency to accept an electron decreases
- C Keadaan fizikal berubah daripada cecair kepada gas
The physical state changes from liquid to gas
- D Daya tarikan antara nukleus dan elektron lebih kuat.
Force of attraction between nucleus and electron become stronger.

- 25 Jadual 1 menunjukkan unsur J, K dan L yang berada dalam Kala 3 Jadual Berkala.
Table 1 shows three elements J, K and L placed in Period 3 of the Periodic Table.

Unsur <i>Elements</i>	Sifat oksida <i>Properties of oxide</i>
J	Amfoterik <i>Amphoteric</i>
K	Bes <i>Basic</i>
L	Asid <i>Acidic</i>

Jadual / Table 1

- Antara berikut, yang manakah susunan yang betul berdasarkan pertambahan nombor proton?
Which of the following is the correct sequence based on the increase in proton number?
- A L, J, K
 B J, K, L
 C K, J, L
 D L, K, J

- 26 Suatu unsur X membentuk dua garam klorida berwarna, XCl_2 dan XCl_3 . Apakah X?
An element X forms two coloured chloride salts, XCl_2 and XCl_3 . What is X?
- A Halogen
Halogen
 B Gas Adi
Noble gases
 C Logam alkali
Alkali metal
 D Unsur peralihan
Transition element

- 27 Maklumat berikut adalah mengenai atom Q dan atom P.
The following information is about atom Q and atom P.
- ★ Atom Q terletak dalam Kala 2 dalam Jadual Berkala
Atom Q is located in Period 2 of the Periodic Table
 - ★ Nombor proton bagi atom P ialah 11
Proton number of atom P is 11
 - ★ Unsur Q terletak di atas unsur P dalam kumpulan yang sama dalam Jadual Berkala
Element Q is located above element P in the same group of the Periodic Table

Yang manakah berikut menunjukkan susunan elektron bagi atom Q?
Which of the following shows the electron arrangement of atom Q?

- A 2.1
 B 2.2
 C 2.8.1
 D 2.8.2

- 28** Pernyataan manakah yang menerangkan mengapa kereaktifan unsur Kumpulan 1 meningkat apabila menuruni kumpulan itu?

Which statement explains why the reactivity of Group 1 elements increase when going down the group?

A Takat lebur bagi unsur menurun

The melting points of the elements decrease

B Elektron valens semakin jauh dari nukleus

The valence electron gets further away from the nucleus

C Daya tarikan antara elektron valens dengan nukleus semakin kuat

The attractive force between valence electron and the nucleus becomes stronger

D Keadaan fizik bagi unsur berubah daripada gas kepada cecair dan kemudian kepada pepejal pada suhu bilik

The physical state of the elements changes from gas to liquid then to solid at room Temperature

- 29** Unsur G terletak dalam Kumpulan 14 dan Kala 2.

Apakah nombor proton bagi atom G?

Element G is placed in Group 14 and Period 2.

What is the proton number for atom G?

A 2

C 14

B 6

D 8

- 30** Apakah ciri istimewa bagi logam peralihan?

What are the special characteristics of transition metals?

I Boleh menunjukkan satu nombor pengoksidaan sahaja.

Can only show one oxidation number.

II Menghasilkan ion berwarna.

Form coloured ions.

III Digunakan sebagai mangkin.

Can be used as catalysts.

IV Logam alkali.

Alkali metals.

A I dan III

C II dan III

B I dan IV

D II dan IV

Selamat mengulangkaji dari telegram@soalanpercubaanspm

31 Antara yang berikut yang manakah benar bagi oksida Kala 3 dalam Jadual Berkala?

Which of the following is true of the oxides of elements in Period 3 of the Periodic Table?

	Na ₂ O	MgO	Al ₂ O ₃	SiO ₂	P ₄ O ₁₀	SO ₂	Cl ₂ O ₇
A	Bes <i>Basic</i>				Amfoterik <i>Amphoteric</i>	Asid <i>Acidic</i>	
B	Bes <i>Basic</i>		Amfoterik <i>Amphoteric</i>	Asid <i>Acidic</i>			
C	Bes <i>Basic</i>		Asid <i>Acidic</i>				Amfoterik <i>Amphoteric</i>
D	Amfoterik <i>Amphoteric</i>	Bes <i>Basic</i>		Asid <i>Acidic</i>			

32 Antara berikut, yang manakah tidak benar berkaitan ikatan kimia?

Which of the following is incorrect about chemical bond?

A Ikatan yang terbentuk apabila berlaku pemindahan atau perkongsian elektron

Bond formed when transfer or share of electrons occur

B Ikatan yang terbentuk kerana atom ingin mencapai kestabilan

Bond formed because atoms want to achieve stability

C Ikatan ion dan ikatan kovalen adalah dua jenis ikatan kimia

Ionic bond and covalent bond are two types of chemical bond

D Ikatan yang melibatkan semua elektron dalam sesuatu atom

Bond formed involving all electrons in an atom

33 Antara berikut, yang manakah sebatian ion?

Which of the following is an ionic compound?

A NaCl

C HCl

B NH₃

D CO₂

34 Antara berikut, yang manakah sifat sebatian ion?

Which of the following is the property of ionic compound?

A Tidak larut dalam air

C Takat lebur dan takat didih yang tinggi

Does not dissolve in water

High melting and boiling points

B Larut dalam pelarut organik

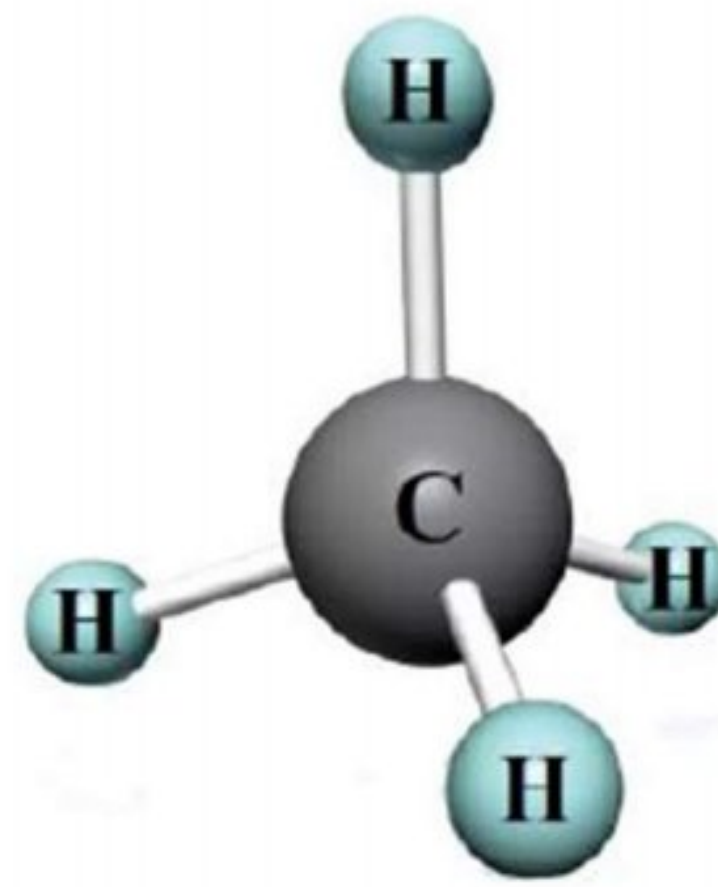
D Mengkonduksikan elektrik dalam keadaan pepejal

Dissolve in organic solvent

Conducts electricity in solid state

- 35 Rajah 1 menunjukkan model atom satu sebatian.

Diagram 1 shows the atom model of a compound.



Rajah / Diagram 1

Antara berikut, yang manakah sifat sebatian itu?

Which of the following is the property of the compound?

A Larut dalam air

Dissolves in water

B Larut dalam pelarut organik

Dissolve in organic solvent

C Takat lebur dan takat didih yang tinggi

High melting and boiling points

D Boleh mengkonduksikan elektrik dalam keadaan leburan

Able to conduct electricity in molten state

- 36 Antara berikut, yang manakah persamaan antara ikatan ion dan ikatan kovalen?

Which of the following is the similarity between ionic bond and covalent bond?

A Hasil ialah molekul neutral

Product is a neutral molecule

B Melibatkan elektron valens sahaja

Involves valence electrons only

C Wujud daya tarikan elektrostatis dalam sebatian

Electrostatic force of attraction is present in the compound

D Berlaku antara atom logam dan atom bukan logam

Occurs between metal atom and non-metal atom

- 37 Antara berikut, yang manakah paling tepat menerangkan sebab gas adi tidak membentuk sebatian?

Which of the following best explains the reason why inert gases do not form compound?

A Gas adi tidak reaktif

Inert gases are unreactive

C Gas adi telah mencapai susunan elektron duplet atau oktet

Inert gases have achieved duplet or octet electron arrangement

B Gas adi wujud sebagai monoatom

Inert gases exist as monoatom

- 38 Rajah 7 menunjukkan keadaan rambut kerinting semasa basah dah kering.
Diagram 7 shows the state of curly hair when dry and wet.



Rajah / Diagram 7

Antara pernyataan berikut, yang manakah menerangkan keadaan tersebut?
Which of the following statement explains the situation?

- A Ikatan kovalen pada molekul protein rambut diputuskan dengan kehadiran molekul air.
Covalent bond in protein molecules of hair is broken with the presence of water molecules.
- B Molekul protein pada rambut membentuk ikatan hidrogen dengan molekul air semasa rambut basah.
Protein molecules in hair forms hydrogen bond with water molecules when hair is wet.
- C Molekul protein pada rambut menyerap air semasa basah, menyebabkan saiz molekulnya bertambah.
Protein molecules in hair absorbs water when wet, causing the molecular size to increase.
- D Elektron pada molekul protein dinyahsetempatkan membentuk lautan elektron menyebabkan rambut kelihatan lurus semasa basah.
Electrons in the protein molecules are delocalised to form sea of electrons causing wet hair to appear straight when wet.

- 39 Rajah 9 menunjukkan perwakilan piawai bagi atom X dan Y.
Diagram 9 shows standard representation of atom X and Y.



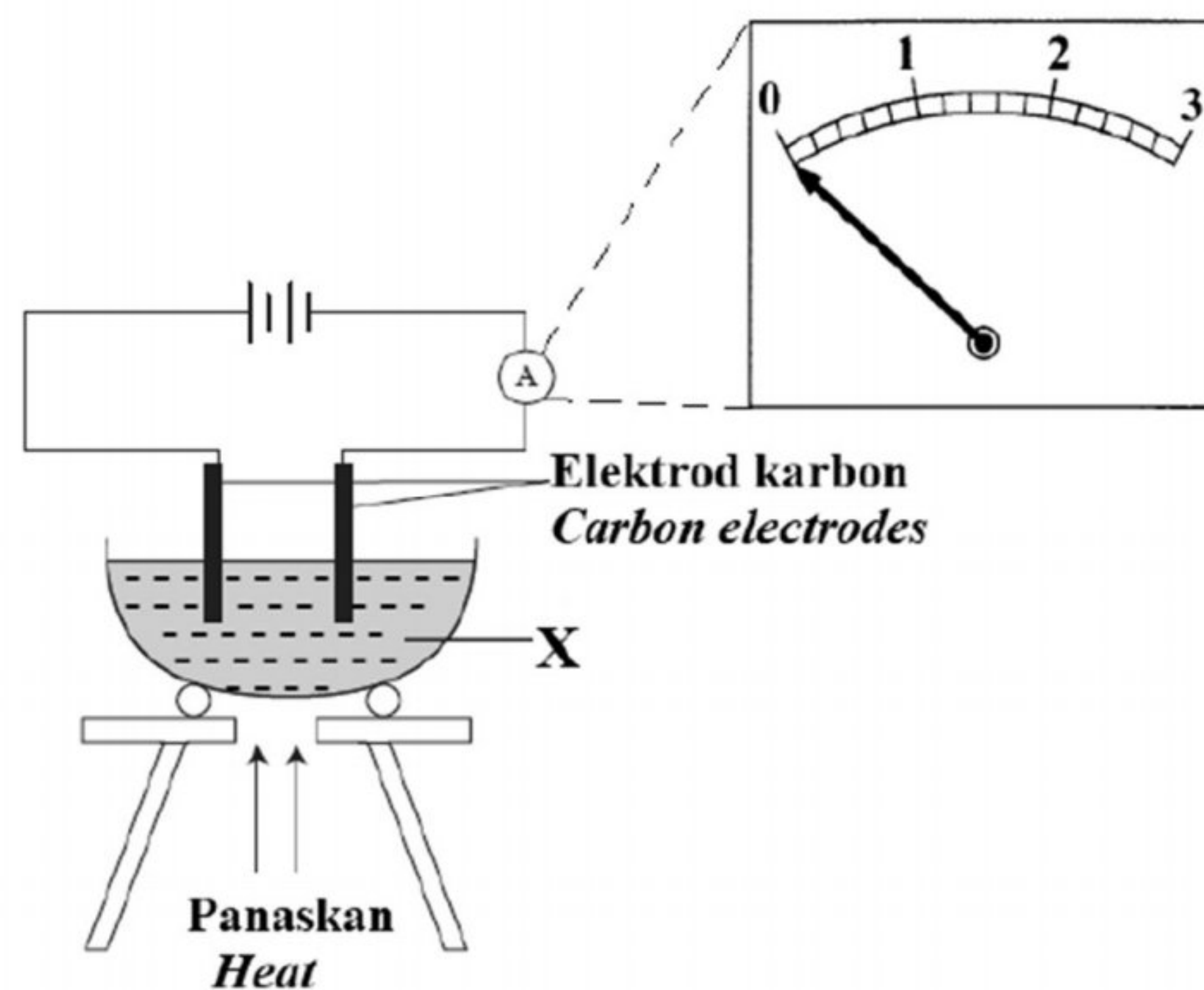
Rajah / Diagram 9

Apakah jisim molekul relatif bagi sebatian yang terbentuk antara atom X dan Y?
What is the relative molecular mass of the compound formed from atom X and Y?

- A 19 B 30 C 39 D 62

- 40 Rajah 11 menunjukkan pemerhatian bagi eksperimen untuk mengkaji kekonduksian elektrik sebatian X.

Diagram 11 shows the observation for the experiment to study the electrical conductivity of compound X.



Rajah 11/ Diagram 11

Antara pasangan atom berikut, yang manakah boleh membentuk sebatian untuk menggantikan X supaya dapat memberi pemerhatian yang berbeza?

Which of the following pair of atoms can form a compound that can replace X in order to give a different observation?

- | | | |
|---|----------------------|----------------------|
| A | 12
6
P | 16
8
Q |
| B | 12
6
P | 23
11
R |
| C | 16
8
Q | 35
17
S |
| D | 23
11
R | 35
17
S |

SOALAN TAMAT

END OF QUESTIONS