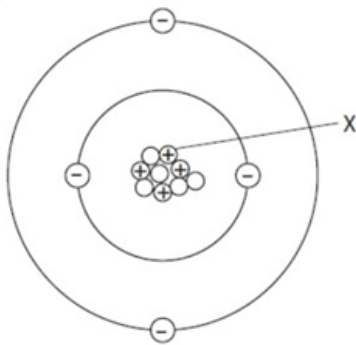


## Year 9 Chemistry practice questions

### End of semester 1 exams

1

CHEM-09-T Ch Periodic Table 9.01-MA-AJA



The diagram represents an atom of an element.

2

1 | Atom

What is the particle labelled X?

- an electron
- an ion
- a proton
- a neutron

3

2 | Mass

What is the mass number of this atom?

- 4
- 5
- 9
- 13

4

3 | Element

Name the element that contains these atoms

The table shows the numbers of protons, neutrons and electrons in some atoms and ions.

Atom or ion	Protons	Neutrons	Electrons
P	6	8	6
Q	5	6	5
R	9	10	10
S	3	4	2
T	6	6	6

5

Multiple Choice

Item

Which particles have the same mass?

- electrons and protons
- electrons and neutrons
- neutrons and protons
- electrons, neutrons and protons

6

Multiple Choice

What is the atomic number of P?

- 6
- 8
- 12
- 14

7

Multiple Choice

What is the mass number of Q?

- 5
- 6
- 10
- 11

8

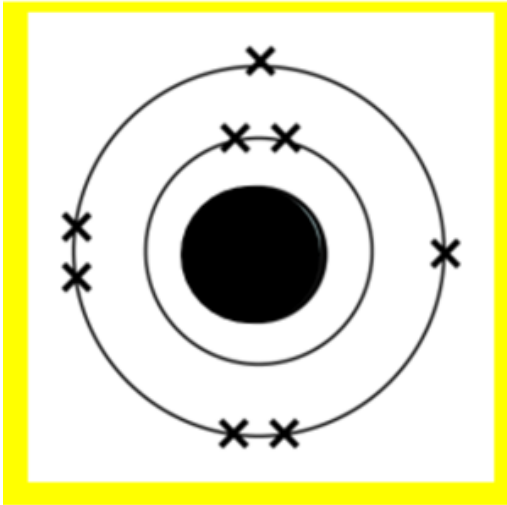
Cloze

a. Which **group** of the Periodic Table contains element **T**?

8

Identify the following element.

1 | Multiple Choice



Oxygen

Carbon

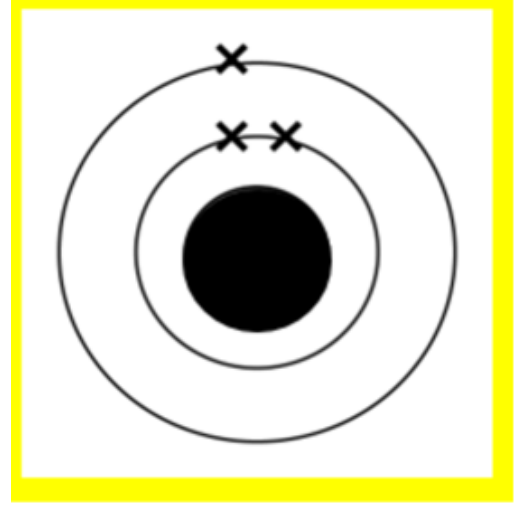
Nitrogen

Calcium

9

Identify the following element.

2 | Multiple Choice



Lithium

Oxygen

Potassium

Sodium

10

Section 3

Drop Down

Look at the table below. Which one of the unknown elements is most likely to be potassium?

Substance	Reaction with air	Reaction with water
A	No reaction	No reaction
B	Dulls (tarnishes) slowly	Slow effervescence (fizzing)
C	Dulls (tarnishes) quickly	Effervescence (fizzing)
D	Dulls (tarnishes) immediately	Violent effervescence (fizzing)

Select ▾

D

A

B

C

## 11 Multiple Choice

Choose the correct answer

1	2		3	4	5	6	7	0									
		H						He									
Li	Be		B	C	N	O	F	Ne									
Na	Mg		Al	Si	P	S	Cl	Ar									
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra	Ac															

- Group 1 is the alkali metals and group 0 is the noble gases
- Group 1 is the alkali metals and group 7 is the noble gases
- Group 1 is alkali metals, group 2 is Earth alkaline metals, group 7 is the halogens
- Group 1 is the noble gases and group 7 is the halogens

## 12 Multiple Choice

Which elements can react similarly with water?

1	2		3	4	5	6	7	0									
		H						He									
Li	Be		B	C	N	O	F	Ne									
Na	Mg		Al	Si	P	S	Cl	Ar									
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra	Ac															

- He, Ne, and Ar
- F, Br, and He
- Cl, F, and Ca
- Li, Na, and K

## Section 4

13

### Cloze

Element	Protons	Neutrons	Electrons	Mass number
Sodium	11	x	y	23
Lithium	z	4	3	e

Find the following:

X is

Y is

Z is

e is

## Section 4

14

### Cloze

The electronic configuration of Sodium is

Sodium has 11 as atomic number.

15

4  
Drop Down

The electronic configuration of He is


Helium
2
<b>He</b>
4.0026

## Section 4

16

Drop Down

Deduce the electronic configuration of potassium from its location.

Potassium is in group one and period 4

So the electronic configuration of K is


## Section 4

6

Drop Down

Element	State	Colour
Flourine	x	y
Iodine	z	e

17

Complete the following diagram.

X is



21

Potassium, sodium and calcium react with cold water to form metal hydroxides and a gas.

hydrogen    oxygen    potassium hydroxide    potassium sulfate

Select substances from the box to complete the word equation for the reaction of potassium with water.

potassium + water → \_\_\_\_\_ + \_\_\_\_\_

22

Magnesium, zinc and iron react with dilute acids to form a salt and a gas.

hydrogen    oxygen    magnesium chloride    magnesium oxide

Select substances from the box to complete the word equation for the reaction of magnesium with hydrochloric acid.

magnesium + hydrochloric acid → \_\_\_\_\_ + \_\_\_\_\_

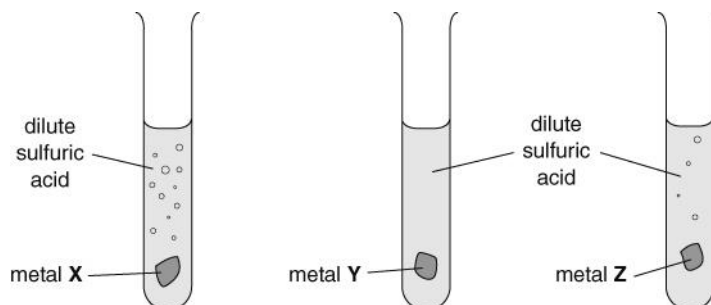
23

Write the word equation for the reaction between zinc and oxygen to form zinc oxide.

\_\_\_\_\_

24

Three metals, **X**, **Y** and **Z**, were placed in separate test tubes of dilute sulfuric acid. The results are shown below.



Use the information in the diagram to put the metals in order of reactivity.

Most reactive \_\_\_\_\_

\_\_\_\_\_

Least reactive \_\_\_\_\_

25

**a** Describe what you would see if a piece of magnesium ribbon was placed in the flame of a Bunsen burner.

\_\_\_\_\_

**b** Explain why the reaction in **a** is an oxidation reaction.



26

Separate samples of three metals, **L**, **M** and **N**, were added to water, added to dilute hydrochloric acid, and heated in air. The results are shown in the table.

Metal	Added to water	Added to dilute hydrochloric acid	Heated in air
<b>L</b>	no reaction	no reaction	reaction
<b>M</b>	reaction	reaction	reaction
<b>N</b>	no reaction	reaction	reaction

Write the metals in order of reactivity, with the most reactive first.

Most reactive \_\_\_\_\_, \_\_\_\_\_, Least reactive \_\_\_\_\_

27

The table below shows some data about some chemical reactions. The initial and final temperatures were measured for each reaction.

Reactants	Initial temperature/°C	Final temperature/°C	Temperature change/°C	Type of change
<b>1</b> Hydrochloric acid and sodium hydroxide	<b>2</b> 18	<b>3</b> 30	<b>4</b>	
<b>5</b> Ethanoic acid and sodium carbonate	<b>6</b> 18	<b>7</b> 12	<b>8</b>	
<b>9</b> Magnesium and copper sulfate solution	<b>10</b> 18	<b>11</b> 65	<b>12</b>	
<b>13</b> Ammonium nitrate and water	<b>14</b> 18	<b>15</b> 15	<b>16</b>	

- Calculate the temperature change for each reaction and record it in the table. Include a + sign or – sign to show whether the temperature increased or decreased.
- Deduce whether each reaction was exothermic or endothermic and complete the final column of the table.

Formulae:  $\text{CaSO}_4$   $\text{MgSO}_4$   $\text{FeCl}_2$   $\text{ZnCl}_2$   $\text{Zn}(\text{NO}_3)_2$   $\text{Fe}(\text{NO}_3)_2$   $\text{Cu}(\text{NO}_3)_2$

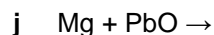
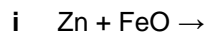
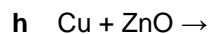
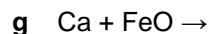
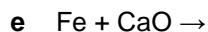
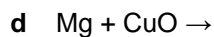
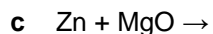
(Hint: The formula  $\text{Pb}(\text{NO}_3)_2$  contains one lead atom, two nitrogen atoms and six oxygen atoms. The '2' outside the bracket doubles the number of atoms of each element inside the bracket.)

### Reactivity Series

calcium, magnesium, zinc, iron, lead, copper, silver  
most reactive least reactive

28

Predict whether each of these reactions will take place. Either write the balanced equation or write 'no reaction'.



### ANSWERS -

1 – PROTON

2 – MASS NUMBER IS 9

3- BERYLLIUM (Be)

4- PROTONS AND NEUTRONS

5- ATOMIC NUMBER 6

6- MASS NUMBER 11

7- GROUP 4

8- OXYGEN

9- LITHIUM

10- D IS POTASSIUM

11- GROUP 1 IS THE ALKALI METALS GROUP 2 IS THE ALKALINE EARTH METALS AND GROUP 7 IS THE HALOGENS

12- Li, Na, K

13- x is 14, y is 11, z is 3 and e is 7.

14- 2,8

15-2

16- 2,8,8,1

17 – FLUORINE – GAS,

18 - IODINE- SOLID

19- HALOGENS

20 – He, NOBLE GAS

21 - **L5** 1 (potassium + water →) potassium hydroxide + hydrogen (products can be in either order)

22 - **L5** 2 (magnesium + hydrochloric acid →) magnesium chloride + hydrogen (products can be in either order)

23 - **L5** 3 zinc + oxygen → zinc oxide

24 - Most reactive      Metal X  
                                 Metal Z  
Least reactive      Metal Y

25 - **L5** 3 a magnesium burns, bright white light, white powder left

                         b magnesium gains oxygen

26 - **L6** 4 (most reactive) M, N, L (least reactive)

27 -

Reactants	Initial temperature/°C	Final temperature/°C	Temperature change/°C	Type of change
hydrochloric acid and sodium hydroxide	18	30	+12	exothermic
ethanoic acid and sodium carbonate	18	12	-6	endothermic
magnesium and copper sulfate solution	18	65	+47	exothermic
ammonium nitrate and water	18	15	-3	endothermic

28- **1** a no reaction  
b  $\text{Mg} + \text{CuO} \rightarrow \text{MgO} + \text{Cu}$   
c no reaction  
d no reaction  
e  $\text{Ca} + \text{FeO} \rightarrow \text{CaO} + \text{Fe}$   
f no reaction  
g  $\text{Zn} + \text{FeO} \rightarrow \text{ZnO} + \text{Fe}$   
h  $\text{Mg} + \text{PbO} \rightarrow \text{MgO} + \text{Pb}$

