

S.2 CHEMISTRY END OF TERM 2

ANSWER ALL QUESTIONS

TIME: 2 HOURS

SECTION A

- Which of the following gases lights a glowing splint?
 - Carbondioxide
 - Hydrogen
 - Nitrogen
 - Oxygen
- Which one of the following is not an acidic oxide
 - Carbonmonoxide
 - Carbondioxide
 - Sulphurdioxide
 - Nitrogendioxide
- Which one of the following burns in air to form a gaseous product?
 - Phosphorus
 - Magnesium
 - Sulphur
 - Sodium
- Which one of the following oxides will dissolve in sodium hydroxide solution?
 - PbO
 - CuO
 - CaO
 - FeO
- Which one of the following metals form an oxide when reacted with water?
 - Magnesium
 - Lead
 - Copper
 - Zinc
- Which one of the following substances is deliquescent substance?
 - Calcium chloride
 - Cobalt(II)chloride
 - Sodium carbonate
 - Iron(II)sulphate
- Beginning with the least reactive, the order of the reactivity of the following metals with water is
 - Sodium, magnesium, lead and copper
 - Lead, zinc, sodium and calcium
 - Zinc, calcium, magnesium and potassium
 - Potassium, calcium, magnesium and zinc
- Which one of the following substances is not used in softening of water?
 - Chlorine
 - Permutit
 - Sodium carbonate
 - Calcium hydroxide
- The process used to obtain pure water from sea water is called.....
 - Sedimentation

- B. Filtration
C. Distillation
D. Decantation
10. Hydrogen is used on a large scale to
A. Manufacture detergents
B. Harden vegetable oils
C. Reduce metal oxides in extraction of metals
D. Make mining explosives
11. Which one of the following processes produces oxygen?
A: Combustion B: Photosynthesis C: Respiration D: Rusting
12. The electronic configuration of an atom of element Z is 2:8:6. The compound formed between Z and hydrogen
A: is a gas at room temperature
B: is a solid at room temperature
C: dissolves in water to form alkaline solution
D: dissolves in water to form a neutral solution
13. The full symbols of atoms of elements W and X are $^{31}_{15}\text{W}$ and $^{37}_{17}\text{X}$ respectively. The formula of a compound formed between W and X is
A: WX B: W_3X C: WX_5 D: W_5X
14. Which one of the following gases cannot be collected over water?
A: Hydrogen chloride B: Oxygen
C: Carbon dioxide D: Hydrogen
15. Which one of the following equations shows a redox reaction?
A: $\text{CaCO}_{3(\text{s})} + 2\text{HCl}_{(\text{aq})} \longrightarrow \text{CaCl}_{2(\text{aq})} + \text{CO}_{2(\text{g})} + \text{H}_2\text{O}_{(\text{l})}$
B: $2\text{KOH}_{(\text{aq})} + \text{H}_2\text{SO}_{4(\text{aq})} \longrightarrow \text{K}_2\text{SO}_{4(\text{aq})} + 2\text{H}_2\text{O}_{(\text{l})}$
C: $\text{Na}_2\text{O}_{(\text{s})} + \text{H}_2\text{O}_{(\text{l})} \longrightarrow 2\text{NaOH}_{(\text{aq})}$
D: $2\text{FeCl}_{2(\text{aq})} + \text{Cl}_{2(\text{g})} \longrightarrow 2\text{FeCl}_{3(\text{aq})}$
16. Which one of the following is a neutral oxide?
A: Carbon monoxide B: Carbon dioxide
C: Sulphur dioxide D: Nitrogen dioxide
17. Which one of the following metals will produce hydrogen when heated with steam?
A: Calcium B: Potassium C: Zinc D: Sodium
18. In which one of the following test tubes would a burning splint produce a pop sound?
The test tube containing
A: manganese (IV) oxide and hydrogen peroxide
B: dilute sulphuric acid and zinc
C: dilute hydrochloric acid and calcium carbonate
D: calcium oxide and water
19. An atom of element Y has two energy levels, if Y forms an ion with formula Y^{2-} , what is the atomic number of Y.
A: 2 B: 4 C: 6 D: 8
20. Which of the following is/are observed when hydrogen is passed over heated copper (II) oxide?
A: a colour liquid B: black solid turns yellow
C: black solid turns brown D: yellow solid turns grey.



SECTION B

21. a) State the principle on which each of the following methods of separating mixtures works.

(i) Chromatography (1 mark)

.....
.....

(ii) Fractional Crystallization (1 mark)

.....
.....

b) State what would be observed and give a reason for your observation, if a mixture of water and the following substance was shaken, then allowed to stand for some time.

(i) Ethanol

• Observation (½ mark)

.....

....

• Reason (½ mark)

.....

(ii) Edible oil

• Observation (½ mark)

.....

...

• Reason (½ mark)

.....

c) Name a piece of apparatus that can be used to separate components of the mixture in (b) (ii) (1 mark)

.....

22. Under suitable conditions, hydrogen peroxide, solution $\text{H}_2\text{O}_2(\text{aq})$ can decompose rapidly to produce oxygen.

a) (i) Write equation for the decomposition of hydrogen peroxide. (1½ mark)

.....
.....

(ii) State two ways in which the decomposition of hydrogen peroxide can be made to occur rapidly.

(1 mark)

.....
.....
.....

.....
..
b) Burning magnesium ribbon was lowered into a jar of oxygen.

(i) State what was observed.

(1 mark)

.....
.....
(ii) Write an equation for the reaction that took place.

(1½ marks)

.....
23. The atomic numbers of elements **W**, chlorine and **Y** are **15**, **17** and **20** respectively.

a) Write the electronic configuration of an atom of element.

(i) **W**

(½ mark)

.....
(ii) **Y**

(½ mark)

.....
b) State which one of the elements **W** or **Y** would form a chloride which is

(i) A solid with high melting point.

(½ mark)

.....
(ii) A volatile liquid at room temperature.

(½ mark)

.....
c) Give reasons for your statement in (b)

(1 mark)

.....
d) Write the formula of the ion of **Y**.

(1½ mark)

.....
24. Define the following terms.

(5 marks)

(a) An

atom.....
.....

(b)

Oxidation.....
.....
.....

(c)
Isotopes.....
.....

(d)An
alloy.....
.....

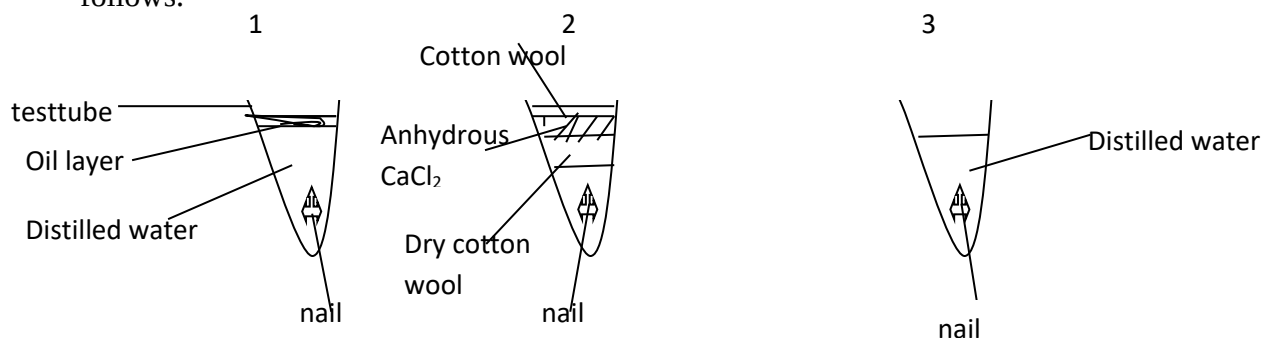
(c) Mixture
.....
.....

25. Part of the periodic table indicating the position of the elements W, X and Z is shown below.

	I	II	III	IV	V	VI	VII	VIII
1								
2	W		X				Z	

- Write the formula of the oxide of W.
 - Write the formula of the compound formed between X and Z.
 - Which one of the following atoms W, X and Z has the largest atomic radius? Give a reason for your answer.
 - Which of the atoms is a non-metal? Give a reason
 - Write the formula of the ion formed by
 - W
 - X
 - Z
 - What is the type of bonding between W and X?
 - Is the melting point of the compound in (f) above higher than that of oxygen gas?
 - With atomic structures show the type of bonding in the compound of X and Z.
26. Given an atom $^{30}_{14}\text{P}$,
- Calculate the neutron number of P
 - What is the group of P?
 - What is the period of P?
 - Draw the atomic structure of P.
 - What is the relationship between P and another compound $^{29}_{14}\text{X}$.
 - Neon** gas exists naturally as three isotopes, neon-20, neon-21 and neon-22. In a sample of neon gas, the relative abundance of the three isotopes is neon-20(90.92%), neon-21(0.26%) and neon-22(8.82%). Calculate the relative atomic mass of neon.
 - What** is the number of neutrons in neon if it is number 10 in the first twenty elements?
27. A small amount of ethanol was added to large amount of water and the mixture shaken.
- Explain what is meant by the term 'mixture'.
 - State the method that would be used to separate the mixture above, state the reason for your answer.

- c) Describe how the method you have stated in (b) above is used to separate the mixture with a diagram.
- d) In another experiment, simsim was shaken with water
- State what is observed.
 - Given a reason for answer in (d)(i) above
 - Name the piece of apparatus that would be used to separate the mixture, state the reason for your answer.
28. (a) State the chemical name of rust.
- b) Given the sets of apparatus below, study them and answer the question that follows.



- State what is observed in testtube 1,2 and 3
 - Give five methods of preventing rust.
- c) State and two conditions required for rusting to occur
- d) What is the effect of common salt on rusting?

END