ALL SAINTS SS HOME LEARNING TEST

S.2 CHEMISTRY

NAME:

SECTION A

Write the correct objective in the space provided.

ANSWER SHEET FOR SECTION A

QN	ANS	QN.	ANS	QN.	ANS	QN	ANS	QN.	ANS	QN.	ANS
1		6		11		16		21		26	
2		7		12		17		22		27	
3		8		13		18		23		28	
4		9		14		19		24		29	
5		10		15		20		25		30	

1. Which of the following substances is used as a catalyst in the preparation of oxygen?
   A. Copper
   B. Copper (II) sulphate
   C. Manganese (IV) oxide
   D. Vanadium (V) oxide

2. Which one of the following statements is false about catalysts? They
   A. Remain chemically the same at the end of a chemical reaction.
   B. Increase the amount of products in chemical reactions
   C. Increase the rates of chemical reactions.
   D. Affect the rates of reactions even in very small amounts.

3. The formula of the ion of element x is x^{3+}. If the electronic configuration of the ion is 2:8, to which group in the periodic table does x belong?
   A. II B. III C. V D. VIII

4. Which one of the following elements will burn in oxygen to form acidic oxides?
   A. Ca B. Zn C. K D. S

5. Which one of the following is not a property of a base?
   A. All bases react with acids to form water and salts
   B. Solutions of all bases turn red litmus blue.
   C. All bases liberate ammonia from ammonium salts
   D. Some bases are not soluble in water

6. The atomic numbers of elements x and y are 17 and 20 respectively. Which one of the following occurs when x combines with y?
   A. Each atom of x loses one electron
   B. An atom of y gains two electrons
   C. The compound formed contains equal numbers of x and y ions.
   D. The solution of the compound formed conducts electricity.

7. The table below shows number of neutrons in atoms W, X, Y and Z and their atomic masses. Which of the atoms are isotopes?

Atom	Atomic mass	Number of neutrons
W	39	20
X	40	20
Y	40	22
Z	41	22

A. W and X
B. X and Y
C. Y and Z
D. W and Z

8. An atom of element Y has two energy levels. If Y forms an ion with the formula Y^{2-}, what is the atomic number of Y?
A. 2 B. 4 C. 6 D. 8

9. The mass number of an atom is 11. If its electronic configuration is 2:3, what is the number of neutrons in the atom?
A. 5 B. 6 C. 8 D. 11

10. Solutions Q, R, T and X have PH values 14, 10, 7 and 2 respectively. Which one of the solutions would react with copper (II) oxide to produce a salt and water?
A. Q B. T C. X D. R

11. Which component of air is removed when air is passed over heated copper turning?
A. Carbon dioxide
B. Oxygen
C. Nitrogen
D. Water vapour

12. Which of the following substances is deliquescent?
A. Concentrated sulphuric acid
B. Copper (II) sulphate
C. Sodium hydroxide pellets
D. Calcium sulphate

13. Which of the following oxide is anhydride of carbonic acid?
A. SO_2 B. CO_2 C. CO D. H_2O

14. Which of the following metals react only when heated in steam?
A. Magnesium
B. Copper
C. Calcium
D. Zinc

15. The products of reaction between a metal and dilute mineral acids are:
A. Hydrogen and hydroxide of metal
B. Hydrogen and oxide of metal
C. Hydrogen and salt
D. Water and salt

16. Which of the following hydroxides is very soluble in water?
A. $Ba(OH)_2$
B. $Zn(OH)_2$
C. KOH
D. $Ca(OH)_2$

17. Which of the following acids is produced in the stomach?
A. Hydrochloric acid
B. Citric acid
C. Carbonic acid
D. Tartaric acid

18. Which of the following statements is false about hydrogen?
A. It is diatomic
B. It is colourless
C. It forms water on burning
D. It is a greenhouse gas

19. Which of these is true about group II elements?
A. Are more reactive that group I elements
B. Their melting points generally decrease down the group
C. Form bigger ions than those of group I
D. Are called alkali metals

20. Which of these is not a definition of reduction reaction?
A. Removal of electrons
B. Addition of electrons
C. Addition of hydrogen
D. Removal of oxygen

21. Which one of these oxides below reacts with both acids and dilute alkalis?
A. Calcium oxide
B. Copper (II) oxide
C. Sodium oxide
D. Zinc oxide

22. Which of the following compounds is a salt?
A. $(NH_4)_2SO_4$
B. $Mg(OH)_2$
C. Fe_3O_4
D. H_2S

23. Which of the following is not a physical property used for determining the purity of a substance?
A. Colour
B. Melting point
C. Boiling point
D. Density

24. The valency of X in XO_2 is
A. 2 B. 1 C. 3 D. 4

25. Which of the following statements is not true about electrovalent compounds? They are:
A. Insoluble in organic solvents
B. Solids with high melting points
C. Electrolytes
D. Absorbers of moisture from the atmosphere.

26. When dry hydrogen gas was passed over heated black oxide, a brown solid Q was formed. What is Q?
A. Copper metal
B. Copper (II) oxide
C. Copper (II) sulphate
D. Copper (II) hydroxide

27. Petrol is separated from crude oil by a process called:
A. Simple distillation
B. Sublimation
C. Fractional distillation
D. Chromatography

28. Which of these is not a property of metals?
A. All react with dilute acids
B. Are malleable
C. Are lustrous
D. Are good conductors of heat and electricity

29. Which of the following changes litmus blue?

A. H_2SO_4
B. CO
C. NaOH
D. HCl

30. When elements burn in air, they form?
A. Hydrogen
B. Oxygen
C. Oxides
D. Salts

SECTION B: *Attempt all questions.*

31. Define the following terms as applied to the separation of mixtures:

(a) (i) filtrate

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(ii) residue

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(iii) solution

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(b) State the method used to separate the following:

(i) miscible liquids

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(ii) immiscible liquids

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(iii) salts with different solubilities

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32. Oxygen gas can be prepared by adding hydrogen peroxide to substance P.

(a) (i) Name the substance P.

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(ii) State the role of P.

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(b) Write a chemical equation for the reaction that takes place.

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(c) Apart from hydrogen peroxide, name any other two substances that could be used to prepare oxygen gas in the laboratory.
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(d) (i) State what is observed when sulphur is burnt in oxygen gas.
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(ii) Write equation for the reaction.
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(e) What is the confirmatory test for oxygen gas?
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33. The number of electrons, protons and neutrons in atoms A, B, C, D and E are shown in the table below:

Atom	Electrons	Protons	Neutrons
A	8	8	8
B	16	16	16
C	13	13	14
D	X	3	4
E	16	16	18

(a) Determine:
(i) The value of X
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……

(ii) The atomic mass of C.
……
……..

(b) Which of the atoms are likely to be isotopes?
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……

(c) Write the electronic configuration of:
(i) A: ……..
(ii) A^{2-}: ……...
(iii) C ……
(iv) C^{3+} ……

(v) D ……

34. Using the outermost shell electrons only, show how the following compounds are formed. (Mg = 12, Cl = 17, H = 1, N = 7, O = 8, C = 6)

(a) NH_3

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(b) $MgCl_2$

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(c) H_2O

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(d) CH_4

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(e) HCl

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35. (a) Name a substance which when dissolved in water makes the water:

(i) temporarily hard

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(ii) permanently hard

…….

(b) State two methods which:

(i) can only be used to soften temporary hard water.

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……..

(ii) are used to soften both temporary and permanent hard water.

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…….

(c) (i) What is scum?

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……..

(ii) Explain why no scum is formed when a detergent is used with hard water.
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(d) State two advantages of hard water.
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36. Steam was reacted with magnesium.

(a) (i) State the conditions for the reaction.
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(ii) State what is observed.
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(iii) Write the equation for the reaction.
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(b) State two other metals which can react with steam like magnesium.
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37. What is the meaning of the following as used in equations:-

(a) (i) Plus sign (+)
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……

(ii) the arrow sign (⟶)
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(b) Complete and balance the following equations:

(i) H_2 (g) + O_2 (g) ⟶
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(ii) $NaOH\ (aq) + H_2SO_4\ (aq) \longrightarrow$

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(iii) $Al\ (s) + HCl\ (aq) \longrightarrow$

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(iv) $Pb\ (NO_3)_2\ (s) \longrightarrow$

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38. (a) State any three characteristics which prove that air is a mixture and not a compound.

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(b) Name three processes that remove oxygen from the atmosphere.

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(c) Name the reagent used to test the following and in each case state what is observed when the reagent is used.

(i) Water

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(ii) Carbon dioxide gas

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39. The figure below shows part of the periodic table indicating the positions of the elements W, X, Y and Z. use the information given to answer the questions that follow:

I	II		III	IV	V	VI	VII	O

W			X				Y	Z

(a) Which element is

(i) Most reactive metal

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(ii) Least reactive none metal

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(b) (i) Write the formula of the oxide of W.

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(ii) The oxide of W was dissolved in water. State whether the resultant solution is acidic, neutral or alkaline.

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(c) Name the particle responsible for the conduction of electricity in

(i) X ……..

(ii) The compound formed between W and Y.

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