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**END OF TERM 2 EXAMINATION**

**S3 CHEMISTRY**

**Paper 1**

**1 hour 30 minutes**

**2019**

**INSTRUCTIONS:**

This paper consists of **50** objective type questions.

Answer **all** questions.

You are required to write the correct answer; **A, B, C** or **D** in **blue** or **black** ink in the box provided on the right-hand side of each question.

Do **not** use pencil. Answers written in **pencil** will **not** be marked.

1. Which one of the following methods is used to separate a mixture of diesel and water?

A. Filtration.

B. Evaporation.

C. Chromatography.

D. Separating funnel.

2. What is the charge on the common ion of atom  ${}_{17}^{35}\text{X}$  ?

A. 2+

B. 1+

C. 1-

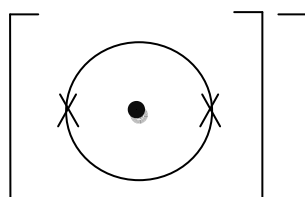
D. 2-

3. Isotopes have

A. the same number of neutrons. B. the same number of protons.

C. the same mass number. D. the same number of atoms.

4. What is the atomic number of the element whose ion is shown in the diagram below?



**Figure one**

A. 1

B. 2

C. 3

D. 4

5. Which one of the following statements is true about chlorine?

A. It displaces fluorine from solution of its salts.

B. It is a reducing agent.

C. It is less dense than air.

D. It forms a precipitate with lead(ii) nitrate solution.

6. Which one of the following substances when heated undergoes a chemical change?

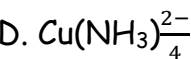
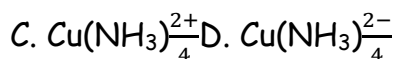
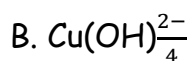
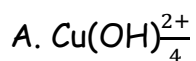
A. Candle wax

C. Zinc Oxide

B. Ammonium chloride.

D. Sodium nitrate

7. The formula of the ion formed when excess ammonia is added to aqueous solution of copper(ii) ions is



8. A mixture of two soluble salts can best be separated by

A. filtration

C. fractional crystallization

B. decanting

D. fractional distillation

9. Which one of the following is the bleaching agent in chlorine water?

A. HOCl

B. HCl

C.  $\text{Cl}_2$

D.  $\text{HClO}_3$

10. Solder is an alloy of

A. Lead and Tin

C. Lead and zinc

B. Zinc and Aluminum

D. Copper and Zinc

11. When an atom loses an electron, the resulting particle is

A. an Isotope

C. a positive ion

B. a noble gas

D. a negative ion

12. During the laboratory preparation of chlorine from concentrated hydrochloric acid, the product is purified by bubbling through

A. concentrated sulphuric acid and then water.

B. water and then passing over calcium oxide.

C. concentrated sulphuric acid only.

D. water and then concentrated sulphuric acid.

13. The valence of element Q in its Oxide of formula QO is

A. 1

B. 2

C. 3

D. 4

14. Element W has atoms with three different masses. The atoms of Q have:

A. the same number of protons

B. the same number of neutrons

C. different number of protons

D. same number of neutrons and protons.

15. Which of the following gases can be obtained by fractional distillation of liquid air?

A. Ammonia

C. Hydrogen.

B. Oxygen

D. Sulphur dioxide

16. Which one of the following is not a property of carbon dioxide?

A. It is slightly soluble in water.

B. It forms a precipitate with lime water.

C. It extinguishes burning magnesium ribbon.

D. It sublimates when solid.

17. Gas X collected in the jar exploded with a pop sound when a burning splint was introduced into the jar the gas is.

A. O<sub>2</sub>

C. CO<sub>2</sub>

B. N<sub>2</sub>

D. H<sub>2</sub>

18. Which one of the following represents the electronic configuration of an element, which forms a chloride of the type MCl<sub>4</sub>

A. 2:8:2

B. 2:6

C. 2:8

D. 2:4

19. The ion formed by the element X of atomic number 13 is

A. X<sup>3-</sup>

B. X<sup>2-</sup>

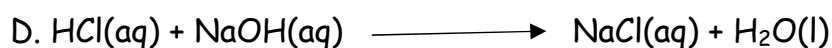
C. X<sup>2+</sup>

D. X<sup>3+</sup>

20. Which one of the following equations represents a redox reaction?

A.  $Pb^{2+}(aq) + SO_4^{2-}(aq) \longrightarrow PbSO_4(s)$

B.  $CO_3^{2-}(aq) + 2H^+(aq) \longrightarrow H_2O(l) + CO_2(g)$ .



21. Which one of the following hydroxides will dissolve in ammonia solution?

A.  $\text{Zn(OH)}_2$ .

B.  $\text{Al(OH)}_3$ .

C.  $\text{Pb(OH)}_2$ .

D.  $\text{Fe(OH)}_3$ .

22. Covalent compounds

A. have low melting points and are formed by sharing electrons.

B. conduct electricity when in molten state.

C. are formed by transfer of electrons.

D. are strong electrolytes.

23. A solution of hydrogen peroxide decomposes at room temperature to form.

A. Oxygen gas only.

B. Water only.

C. Water and hydrogen only.

D. Oxygen and water only.

24. Which one of the following will be the colour of the precipitate formed when lead(II) nitrate solution is added to sodium chloride solution?

A. Blue.

B. Brown.

C. Yellow.

D. White.

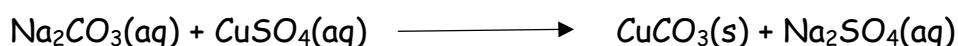
25. Blue Cobalt Chloride paper is used for identification of

A. Carbon dioxide B. Water

C. Oxygen

D. Hydrogen

26. Below is an equation leading to the formation of a salt?



The above reaction is?

A. Neutralisation.

B. Precipitation.

C. Direct synthesis.

D. Crystallisation.

27. Which one of the following substances is miscible with water?

- A. Ethanol                      B. Cooking oil
- C. Kerosene                      D. Petrol

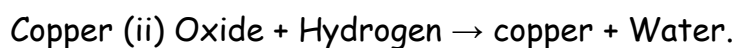
28. Petroleum is separated into its compounds by

- A. electrolysis.                      C. fractional distillation.
- B. osmosis.                      D. chromatography.

29. Which one of the following acids is completely dissociated in aqueous solution?

- A. Carbonic acid.
- B. Nitric acid.
- C. Ethanoic acid.
- D. Citric acid.

30. Copper (ii) Oxide reacts with hydrogen according to the equation below;



The reducing agent in the above reaction is                     

- A. Copper (ii) oxide                      B. hydrogen
- C. Copper                      D. water

31. The term oxidation means

- A. Addition of electron(s) to a substance.
- B. Addition of hydrogen to a substance.
- C. Removal of oxygen from a substance.
- D. Removal of electron(s) of a substance.

32. The process by which a gas is converted into solid without passing through liquid state is called.

- A. chromatography                      B. Condensation
- C. sublimation.                      D. evaporation.

33. Which one of the following gases will produce white fumes when placed near concentrated ammonia?

A. Hydrogen chloride.

B. Sulphur dioxide.

C. Hydrogen

D. Oxygen

34. Which one of the following burns in air to form a gaseous product?

A. Sulphur

B. Sodium

C. Magnesium

D. Lead

35. Noble gases are unreactive because

A. they have stable electron arrangement

B. they have few electrons

C. their outer most shells need few electrons to be complete

D. their innermost shells have one electron

36. Which one of the following is true about an atom of Carbon, when it combines with Oxygen?

A. it forms ions, which are negatively charged.

B. it forms ions which are positively charged.

C. it donates electrons to Oxygen.

D. it shares electrons with Oxygen.

37. The reaction in which vegetable oil is changed to margarine is called

A. dehydration

B. hydrogenation

C. hydration

D. Oxidation

38. Which one of the following reagents is normally used to test for the presence of a chloride ion in solution?

A. Potassium iodide.

B. Barium nitrate.

C. Silver nitrate.

D. Lead(II) nitrate.

39. Which of the following is an electrovalent compound?

A. hydrogen chloride gas B. Sulphur dioxide gas

C. Sodium Chloride D. Ammonia gas

40. In which one of the following gases will magnesium burn to form a white solid that will react with water to form ammonia?

A. NO<sub>2</sub>

B. N<sub>2</sub>O

C. NO

D. N<sub>2</sub>

Each of the questions 41 to 45 consists of an assertion (statement) on the left-hand side and a reason on the right - hand side.

**Select**

A. if both the assertion and the reason are **true** statements and the reason is a correct explanation of the assertion.

B. if both the assertion and the reason are **true** statements but the reason is **not** a correct explanation of the assertion.

C. if the assertion is **true** but the reason is **not** a correct statement.

D. If the assertion is **not** correct but the reason is a correct statement.

**Instructions Summarized**

Assertion	Reason
A. True	True (Reason is a correct explanation)
B. True	True (Reason is not a correct explanation)
C. True	Incorrect
D. Incorrect	Correct

41. Ammonia gas cannot be dried using concentrated sulphuric acid	<b>because</b>	Concentrated sulphuric acid is a dehydrating agent.	<input type="checkbox"/>
42. Zinc hydroxide dissolves in Excess aqueous ammonia	<b>because</b>	Zinc ions form a complex ion With ammonia.	<input type="checkbox"/>
43. Concentrated nitric acid reacts with sulphur to form sulphur dioxide	<b>because</b>	the concentrated acid is an oxidising agent.	<input type="checkbox"/>
44. Ammonium chloride and Sodium chloride are separated By sublimation	<b>because</b>	Sodium chloride has a lower Melting point than ammonium Chloride.	<input type="checkbox"/>
45. Chlorine is used to prepare	<b>because</b>	Chlorine is an oxidising agent.	<input type="checkbox"/>



anhydrous iron(II) chloride		
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Questions 46-50 have one or more answers that may be correct. Read each question carefully then indicate the correct answer according to the following;

A. if 1, 2, 3 only are correct

B. if 1, 3 only are correct

C. if 2, 4 only are correct

D. if 4 only is correct.

46. An aqueous solution of hydrogen chloride

1. turns red litmus blue

2. turns blue litmus red

3. forms a white precipitate with  $Al^{3+}(aq)$

4. conducts electricity

47. Ionic compounds are generally

1. Conductors of electricity in molten state

2. Soluble in water

3. Compounds of high melting points.

4. Liquids at room temperature.

48. Which of the following is true about water?

1. Its molecules are formed by covalent bonding.

2. Its molecules are formed by electrovalent bonding.

3. It is formed when hydrogen peroxide decomposes.

4. It changes blue litmus paper to red.

49. An aqueous solution of hydrogen chloride

1. turns red litmus blue
2. turns blue litmus red
3. forms a white precipitate with  $Al^{3+}(aq)$
4. conducts electricity

**50.** When zinc metal is placed in a solution of copper (II) sulphate,

1. a brown solid is formed
2. a colourless gas is evolved.
3. the solution fades in colour
4. the solution turns colourless.

END

*YOU REAP WHAT YOU SOW.*