

Name:.....

END OF TERM 2 EXAMS-2019
S.3 CHEMISTRY 545/1
1½ HOURS

INSTRUCTIONS:

- *This paper consists of 50 objective type questions.*
- *Answer all the questions in this paper.*
- *Write the letter that corresponds to the correct alternative in the table below*

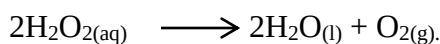
Do not use pencil.

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
11.	12.	13.	14.	15.	16.	17.	18.	19.	20.
21.	22.	23.	24.	25.	26.	27.	28.	29.	30.
31.	32.	33.	34.	35.	36.	37.	38.	39.	40.
41.	42.	43.	44.	45.	46.	47.	48.	49.	50.

1. The most efficient method for separating a mixture of copper (II) sulphate and lead (II) sulphate is by:
A. crystallization B. sublimation C. filtration D. decantation
2. Which one of the following methods is most suitable for preparing a pure dry sample of silver chloride?
A. direct synthesis B. precipitation C. neutralization D. reacting silver with acid.
3. Element X belongs to group II in the periodic table. The formula of the oxide of X is
A. XO B. X₂O C. X₂O₃ D. XO₂
4. Which of the following are the raw materials used to prepare hydrogen gas in the laboratory?
A. copper and conc.sulphuric acid B. zinc and dilute sulphuric acid
C. magnesium and cold water D. zinc and water
5. Ionic compounds have high melting points because
A. ions strongly attract each other B. ions strongly repel each other
C. they combine by transfer of electrons D. ions are arranged in a crystal lattice
6. Which of the following salts can be prepared by precipitation?
A. lead (II) nitrate B. calcium sulphate
C. copper (II) chloride D. sodium chloride

7. Which one of the following hydroxides when strongly heated produce a yellow solid on cooling?
 A. $\text{Zn}(\text{OH})_2$ B. $\text{Pb}(\text{OH})_2$ C. $\text{Cu}(\text{OH})_2$ D. $\text{Fe}(\text{OH})_2$
8. Which one of the following oxides can be reduced by carbon?
 A. MgO B. CuO C. CaO D. K_2O
9. Which one of the following is a basic oxide?
 A. CaO B. P_2O_5 C. ZnO D. SO_2
10. The extent to which salts dissolve in water vary depending on the following except?
 A. nature of the solute B. solvent
 C. temperature D. concentration of the salt

11. Hydrogen peroxide decomposes to give oxygen according to the following equation



The volume of oxygen produced at s.t.p when 50cm^3 of 3M hydrogen peroxide solution decomposes completely is

(1 mole of a gas occupies 22.4dm^{-3} at s.t.p)

- A: $\left(\frac{50 \times 2 \times 22.4}{1000 \times 3}\right) \text{dm}^3$ B: $\left(\frac{50 \times 3 \times 22.4}{1000 \times 2}\right) \text{dm}^3$
 C: $\left(\frac{1000 \times 3 \times 22.4}{50 \times 2}\right) \text{dm}^3$ D: $\left(\frac{50 \times 3 \times 2 \times 22.4}{1000}\right) \text{dm}^3$

12. Which one of the following properties is not shown by group VII elements. They:
 A. are all non metals
 B. are all gases at room temperature
 C. all form ionic compounds with group I elements
 D. all form diatomic molecules.
13. Lead (II) chloride can be prepared in the laboratory by the action of hydrochloric on:
 A. lead (II) nitrate B. lead (II) oxide C. lead (II) carbonate D. lead metal
14. Atoms of elements in the same group in the periodic table have same number of
 A. protons in the nucleus B. outer shell electrons
 C. electrons outside the nucleus D. neutrons in the nucleus
15. A hydrocarbon contains 74% carbon, the empirical formula is
 A. CH_2 B. CH_4 C. CH_3 D. CH
16. An atom of an element has the structure $^{20}_{10}\text{X}$. The element
 A. forms covalent bonds readily with non metals
 B. has full shells of electrons
 C. forms ionic bonds with metals
 D. belongs to group II of the periodic table
17. Which one of the following sets of elements are arranged in their correct order of reactivity, beginning with the least reactive?

- A. copper, hydrogen, magnesium B. hydrogen, copper, magnesium
C. magnesium, hydrogen, copper D. hydrogen, magnesium, copper
18. During the preparation of hydrogen from zinc hydrochloric the rate of reaction is increased by
A. heating the mixture strongly
B. adding copper (II) sulphate to the mixture
C. adding copper (II) oxide to the mixture
D. adding manganese (IV) oxide to the mixture
19. Which one of the following statements about graphite is true?
A. it has a layer structure B. it refracts light rays strongly
C. it is used for cutting glass D. it has a high density
20. Sodium hydrogen carbonate and sodium carbonate occur in solution in lake Magadi. The two salts are separated by a method known as:
A. fractional crystallization B. fractional distillation
C. evaporation D. chromatography
21. The ion formed by the element X of atomic number 13 is
A. X^{3+} B. X^{2-} C. X^{2+} D. X^{3-}
22. The process of making iron from steel is called
A. galvanization B. alloying C. metal plating D. glazing
23. Which one of the following properties is not shown by carbon mono oxide?
A. it is acidic oxide B. it is insoluble in water
C. it is a reducing agent D. it pollutes the atmosphere
24. A white solid X, was kept in an open container. After some days the solid became liquid X is
A. calcium oxide B. fused calcium chloride
C. magnesium hydroxide D. sodium carbonate crystals
25. Which one of the following process increases the concentration of oxygen in the atmosphere?
A. photosynthesis B. combustion
C. fermentation D. decaying of organic matter
26. The following acids are completely ionized in water except
A. hydrochloric acid B. carbonic acid
C. nitric acid D. sulphuric acid
27. Which one of the following metals can displace hydrogen from dilute hydrochloric acid?
A. magnesium B. copper C. silver D. lead
28. Which one of the following is an acid salt?
A. $CaSO_4$ B. $NaHCO_3$ C. NH_4Cl D. KNO_3
29. The atomic numbers of elements W, X, Y and Z are 12, 14, 16 and 18 respectively. Which one of the elements is likely to show properties similar to an element with atomic number 10?
A. Z B. Y C. X D. W
30. Hydrogen is used on a large scale to:
A. manufacture detergents

- B. harden vegetable oil
- C. reduce metal oxides in the extraction of metals
- D. make mining explosives

31. The electronic configurations of some elements are shown below
M 2:6 N 2:5 P 2:8:3 Z 2:8:2
The pair of elements that can form an ionic compound is
A. Z and M B. N and N C. Z and P D. M and N
32. Which one of the following is observed when magnesium burns in air?
A. a bright flame B. black specks C. a white powder D. molten beads
33. The components of ink can be separated by:
A. distillation B. chromatography C. filtration D. electrolysis
34. Which one of the following is not true about an element M with electronic configuration of 2:8:3?
A. its valencies are 1,2 and 3. B. it is a metal
C. it dissolves in dilute acids to give hydrogen D. it conducts heat and electricity
35. An alloy of solder consists of
A. tin and lead B. copper and lead
C. copper and aluminium D. zinc and lead
36. Which one of the following pairs of elements can form an ionic bond?
A. hydrogen and oxygen B. potassium and bromine
C. copper and zinc D. hydrogen and chlorine
37. Which one of the elements with the following atomic numbers reacts most vigorously with water?
A. 2:8:1 B. 2:8:8:1 C. 2:8:2 D. 2:8:8:2
38. A catalyst is a substance which
A. controls the concentration of reactants
B. increases the rate of a chemical reaction
C. stops a reaction from being violent
D. neutralizes a base
39. Isotopes of an element have got
A. same number of electrons and protons B. same number of electrons and neutrons
C. different number of electrons and protons D. same number of protons and neutrons
40. What is the percentage of oxygen in iron (III) sulphate; $\text{Fe}_2(\text{SO}_4)_3$
(S = 32, Fe = 56, O = 16)
A: 48.0 B: 30.8 C: 16.0 D: 15.4

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 assertion and reason are true statements and the reason is a correct explanation of the assertion.
- B. If both the assertion and 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 SUMMARISED.

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

- 41 Alkali metals are highly electropositive because they have one element in their outermost shell
- 42 When pure copper is heated in air, its mass increases because the metal is high in the reactivity series
- 43 Potassium with atomic number 19 belongs to group I in the periodic table because potassium gains one electron to form potassium ion
- 44 When concentrated sulphuric acid is left exposed to air, its volume increases because the sulphuric acid is hygroscopic
- 45 A mixture of ammonium chloride and sodium chloride can be separated by sublimation. because the salts have a common anion

In each of the questions 46 to 50, one or more of the answers given may be correct. Read each questions carefully and indicate the correct answer A,B,C or D according to the following.

- A. if 1,2,3 only are correct
 B. if 1,3 only are correct
 C. if 2 and 4 only are correct
 D. if 4 only is correct.
46. Which of the following salts are soluble in water?
 1. Sodium chloride
 2. Magnesium sulphate
 3. Lead II nitrate
 4. Lead II chloride
47. Which of the following properties of metals is/are a result of its , their having free delocalized electrons?
 1. malleability
 2. Ductility
 3. heat conduction
 4. electrical conduction
48. The electronic configuration of elements B, D, E and F are 2:4, 2:6, 2:8:3 and 2:8:7 respectively. Which elements when reacted together will form covalent compounds
 1. B and D
 2. D and E
 3. B and F
 4. E and F
49. Oxidation is a reaction in which
 1. oxygen is removed from a substance
 2. hydrogen is removed from a substance
 3. hydrogen is added to a substance
 4. electron is lost from a substance.

50. Which of the following is/are true about an element with atomic mass II?
- | | |
|------------------------------|--|
| 1. it forms ionic oxides | 2. it belongs to group III of the periodic table |
| 3. it forms ionic chlorides. | 4. it is a mixed – covalent structure. |

E N D