NAME:……STREAM:……..…….

END OF TERM 2 EXAMINATIONS, 2019

S.3 CHEMISTRY PAPER 1

TIME: 1 HOUR 30 MINUTES

INSTRUCTIONS

- *The paper consists of 50 objective – type questions.*
- *Answer ALL questions.*
- *You are required to write the correct answer A, B, C and D in the answer sheet provided t the back.*
- *Don't use pencil.*

1. Spring water decomposes on boiling to produce white solid particles. The white particles are:
   A. Calcium bicarbonate
   B. Calcium sulphate
   C. Calcium carbonate
   D. Calcium bi sulphate

2. When hydrogen is passed over heated Copper (II) Oxide, a brown solid is formed. This shows that:
   A. Hydrogen is inert towards metals
   B. Hydrogen is a reducing agent.
   C. Copper is an oxidizing agent
   D. Copper is above hydrogen in the activity series.

3. Which one of the metal atoms whose electronic structure given below forms a nitrate of the types $M(NO_3)_2$?
   A. 2:8:0 B. 2:8:1 C. 2:8:2 D. 2:8:3

4. Which of the following structures has giant ionic structure?
   A. Sodium Chloride
   B. Carbondioxide
   C. Monodinic sulphur
   D. Diamond

5. Which of the following elements reacts with nitrogen when heated?
   A. Copper
   B. Sulphur
   C. Zinc
   D. Magnesium

6. Which of the following substances will sublime when heated?
   A. Sodium Chloride
   B. Phosphorus
   C. Dry ice
   D. Copper (II) Sulphate

7. When elements X and Y combine to form a compound XY, the properties of XY are:
   A. similar to the properties of X.
   B. similar to the properties of Y
   C. a mixture of the properties of X and Y.
   D. completely different from the properties of X and Y.

8. In which of the following are particles most disordered?
   A. water at 100^{o}C
   B. water at 0^{o}C
   C. ice at 0^{o}C
   D. vapour at 100^{o}C

9. Which one of the following methods may be used to separate blood from blood plasma?
   A. Centrifugation
   B. Filtration
   C. Decantation
   D. Solvent extraction

10. The chemical name for rust is:
   A. Anhydrous Iron (III) oxide
   B. Hydrated Iron (III) oxide
   C. An hydrous Iron (II) Oxide
   D. Hydrated Iron (II) Oxide

11. Which of the following would increase in mass when heated carefully in an open dish?
   A. Dry sand
   B. Potassium chloride
   C. Copper powder
   D. Copper Carbonate

12. Some solid grease dissolved in petrol to form a mixture X. This shows that X is a:
   A. Solute
   B. Residue
   C. Solution
   D. Solvent

13. Sulphur powder and Iron fillings can best be separated using:
   A. Hand
   B. Magnet
   C. Centrifuge
   D. Decentrifuge

14. The formula of an Ion of element Z is Z^{2+}, the likely structure of an atom of element Z is:
   A. $^{27}_{13}Z$ B. $^{23}_{11}Z$ C. $^{24}_{12}Z$ D. $^{15}_{7}Z$

15. Which of the following statements is true about mixtures separated by fractional distillation?

A. The components are miscible
B. The components have close boiling points
C. The components are immiscible
D. The components have different rates of movements.

16. Metal Z reacts with cold water while Y reacts with steam. X reacts with an aqueous solution of Y according to the equation

$X(s) + Y^{2+}(aq) \longrightarrow X^{2+}(aq)$+ Y(s)

The order of reactivity of metals starting with the least reactive is:

A. Z, Y, X B. Y, X, Z C. X, Z, Y D. X, Y, Z

17. When water is added to solid M, a colourless gas which relights a glowing splint is involved. M is likely to be:

A. Na_2O_2 B. $KClO_3$ C. Na_2CO_3 D. H_2O_2

18. Which of the following forms of carbon consists of hexagonal crystals?

A. Lampblack C. Diamond
B. Soot D. Graphite

19. Which of the following acids reacts with Copper metal evolving reddish brown fumes?

A. H_2CO_3 B. HNO_3 C. H_2SO_4 D. HCl

20. The formula of a Sulphate of element M is MSO_4. The electronic structure of an atom of an element that belongs to the same group with M is:

A. 2:1 B. 2:5 C. 2:2 D. 2:4

21. The number of particles in the atoms of elements P, Q, R, and S are:

Atom	***Protons***	***Neutrons***	***Electrons***
P	6	6	6
Q	2	2	2
R	4	5	4
S	6	7	6

Which of the atoms are isotopes?

A. P and R B. R and S C. P and Q D. P and S

22. The volume of oxygen produced when Hydrogen Peroxide decomposes is increased by:
    A. Increasing the volume of Hydrogen Peroxide.
    B. Adding Manganese (IV) oxide.
    C. Adding Copper (II) Sulphate
    D. Mixing with Vanadium (V) oxide.

23. The catalyst used in the preparation of hydrogen is:
    A. Manganese (IV) Oxide
    B. Iron
    C. Copper (II) Sulphate
    D. Vanadium (V) Oxide

24. An oxide dissolves in water to form a solution of pH_4. The oxide is:
    A. Basic
    B. Acidic
    C. Neutral
    D. Amphoteric

25. Separation of sand and water mixture could easily be carried out by using the differences in:
    A. States
    B. Shape
    C. Solubility in oil
    D. Ability to sublime

26. The atomic number of an element is:
    A. The number of electrons only.
    B. The number of protons and neutrons only
    C. The number of protons only
    D. The number of neutrons only.

27. Which of the following substances is efflorescent?
    A. Calcium Chloride
    B. Potassium hydroxide
    C. Concentrated Sulphuric acid
    D. Sodium Carbonate – 10 – water.

28. Which of the following substances is deliquescent?
    A. Sodium Hydroxide
    B. Sodium Chloride
    C. Calcium Chloride
    D. Calcium Hydroxide

29. Components of coloured mixtures can be separated by chromatography. This is because:
    (i) They have different rates of movement.
    (ii) They have different densities

(iii) They are volatile

(iv) They have different colours

A. (ii) and (iv) B. (i) and (iv) C. (iii) and (iv) D. (iv) only

30. What is finally observed when excess carbon dioxide is bubbled through sodium hydroxide solution?

A. White precipitate C. Milk solution

B. White solution D. Colourless solution

31. The gaseous product of the warming of Potassium Chlorate with Manganese (IV) Oxide is tested by:

A. use of lime water C. Use of glowing split

B. Use of Potassium dichromate D. Use of burning split

32. Which of these oxides is amphoteric?

A. CuO B. Na_2O C. CO_2 D. Al_2O_3

33. Element M has atomic mass 27 and 14 neutrons. What is the electronic configuration of M^{3+}?

A. 2:8:3 B. 2:8:4 C. 2:8 D. 2:8:7

34. Which of the following in aqueous solution has a pH equal to 7?

A. Sodium Chloride C. Sodium hydrogen carbonate

B. Vinegar D. Calcium hydrogen carbonate

35. Sodium hydrogen carbonate and sodium carbonate occur in solution. The two salts are separated by taking advantage of their:

A. boiling points. C. molecular structures

B. solubilities. D. colours

36. Atoms that have the same number of electrons and different number of neutrons can be best described as:

A. metalloids C. Isotopes

B. allotropes D. Isomers

37. The formula of oxide is MO, what is the formula of it's hydrogen carbonate?

A. $MHCO_3$ C. $M_2(HCO_3)$

B. $M(HCO_3)_2$ D. $M(HCO_3)_3$

38. A Bunsen burner will produce a sooty flame when:

A. Air holes are closed
B. Air holes are open
C. The gas pressure is low
D. Burning back occurs

39. Which one of the following gases can cause green house effect?

A. Nitrogen
B. Oxygen
C. Carbon monoxide
D. Carbon dioxide

40. Which of the following metals will displace Lead from Lead (II) nitrate solution: A.

A. Silver
B. Copper
C. Zinc
D. Mercury

Each of the question 41 – 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 statement and the reason is a correct explanation of the assertion.
B. If both assertion and reason are true but the reason is not correct explanation of the assertion.
C. If the assertion is true but the reason is an incorrect statement.
D. If the assertion is incorrect but the reason is a true statement.

Summary of instructions.

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

41. Graphite and Diamond show different chemical properties BECAUSE Graphite and diamond are allotropes of carbon

42.	The number of protons in an atom is equal to the number of neutrons.	BECAUSE	The mass of a proton is approximately equal to that of a neutron.
43.	Water is a mixture of hydrogen and oxygen	BECAUSE	When water is heated oxygen is is given off.
44.	Hydrogen is a common reducing agent.	BECAUSE	It adds oxygen to the substances
45.	Carbon monoxide is a neutral gas	BECAUSE	It burns in oxygen with as blue flame

Each of the questions 46 -50, one or more of the answers given may be correct, read each question carefully and then indicate your answer against the question number.

Instructions summarized.

A	B	C	D.
1, 2, 3 only Correct	**1, 3 only correct**	**2, 4 only correct**	**4 only correct**

46. The following will sublime when heated;
    1. sodium chloride
    2. Aluminium chloride
    3. Copper (II) chloride
    4. Ammonium chloride

47. The following elements exhibits allotropy:
    1. Oxygen
    2. Bromine
    3. Caesium
    4. Carbon

48. Which of the following are mixtures?
    1. Diamond
    2. Brass
    3. Aluminium
    4. Steel

49. Which of the following ions can cause hardness in water?
    1. Mg^{2+}
    2. Fe^{2+}
    3. Ca^{2+}
    4. Pb^{2+}

50. On going down a group in the periodic table.
    1. atomic number increases
    2. number of shells increase.
    3. ionic radius increases
    4. non – metallic character increases.

ANSWER SHEET

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

END