



TAIDOB COLLEGE

**PRE-UTME PREPARATORY
ASSESSMENT**

Chemistry

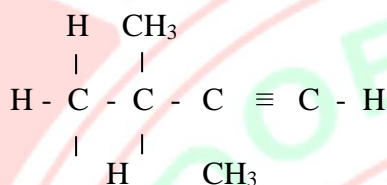
- An atom of an element X with 14 protons, 16 neutrons and 18 electrons can be represented as
 - ${}^{31}_{18}\text{X}^{3+}$
 - ${}^{33}_{15}\text{X}^{3-}$
 - ${}^{31}_{15}\text{X}^{3-}$
 - ${}^{31}_{16}\text{X}^{3+}$
- The volume of oxygen required to completely burn 1.12g of methane is (C = 16H = 1)
 - 4 256cm³
 - 1 785cm³
 - 2 631cm³
 - 3 136cm³
- Water can be identified by the use of
 - CuSO₄
 - K₂Cr₂O₇
 - ZnSO₄⁴
 - Na₂CO₃
- Aluminium oxide is a
 - basic oxide
 - acidic oxide
 - neutral oxide
 - amphoteric oxide
- Which of the following salt is slightly soluble in water?
 - (NH₄)₂CO₃
 - CaSO₄
 - AgCl
 - Pb(NO₃)₂
- What is the time taken or 6.0g of gold to be deposited if a current of 5A is passed through a solution of AuNO₃? (Au = 197, 1 Faraday = 96 500C)
 - 12.4mins
 - 9.8mins
 - 8.9mins
 - 6.7mins
- Which of the following is not true about heat of neutralization
 - always exothermic
 - involves formation of water
 - always endothermic
 - value depends on the strength of acid and base used
- A mixture of iron and sulphur can be separated by dissolving the mixture in
 - steam
 - dilute hydrochloric acid
 - dilute sodium hydroxide
 - benzene

9. The formula of the compound formed in a reaction between a trivalent metal M and a tetravalent non-metal X is
- MX
 - M_3X_4
 - M_4X_3
 - M_3X_2
10. The maximum number of electrons in the L shell of an atom is
- 8
 - 18
 - 32
 - 2
11. A stain of coffee can be removed by
- borax
 - turpentine
 - kerosene
 - ammonia solution
12. Which of the following is used to check faults in industrial welds and castings?
- iodine-121
 - cobalt-60
 - carbon-14
 - phosphorus-32
13. A gas that can be collected by downward displacement of air is
- Cl_2
 - SO_2
 - NH_3
 - H_2S
14. A nitrate is heated with the evolution of a brown gas and a yellow residue which turns white when cold is left. What is the nitrate so heated?
- $NaNO_3$
 - $Pb(NO_3)_2$
 - $Cu(NO_3)_2$
 - $Zn(NO_3)_2$
15. An example of aliphatic unsaturated hydrocarbon is
- butanol
 - propene
 - pentane
 - benzene
16. A metal common to brass and bronze is
- aluminium
 - copper
 - nickel
 - iron

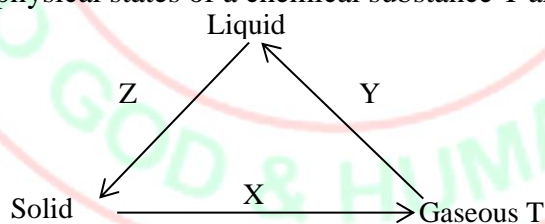
17. What is the difference in the number of hydrogen atom between an alkane and a corresponding cyclic alkane?
- 4
 - 3
 - 1
 - 2

18. Water gas is mixture of
- CO and N₂
 - CO₂ and CO
 - CO and H₂
 - H₂S and NH₃

19. What is the IUPAC name of the compound above?



- 2, 2-dimethyl but-3-yne
 - 2, 2-dimethyl but-1-ene
 - 3, 3-dimethyl but-1-ene
 - 3, 3-dimethyl but-1-yne
20. Equal moles of ethyne and hydrogen iodide react to give
- iodoethene
 - diiodoethane
 - tetraiodoethane
 - iodoethane
21. Change in the physical states of a chemical substance T are shown in the scheme below.



The letter X, Y and Z respectively represent

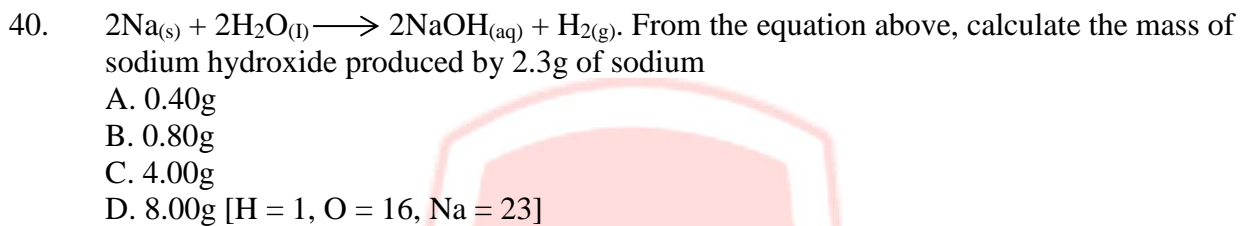
- sublimation, condensation and freezing
 - sublimation, vaporization and solidification
 - freezing, condensation and sublimation
 - evaporation, liquefaction and solidification
22. Which of the following can be obtained by fractional distillation?
- Nitrogen from liquid
 - Sodium chloride for sea water
 - Iodine from a solution of iodine in carbon tetrachloride
 - Sulphur from a solution of sulphur in carbon disulphide.
23. Which of the following are mixture? i. Petroleum ii. Rubber latex iii. Vulcanizer's solution iv. Carbon(II) sulphide

- A. i, ii, and iii
B. i, ii and iv
C. i and ii only
D. i and iv
24. Which of the following substances is not a homogeneous mixture?
A. Filtered sea water
B. Soft drink
C. Flood water
d. Writing ink
25. The dissolution of common salt in water is a physical change because
A. the salt can be obtained by crystallization
B. the salt can be recovered by the evaporation of the water
C. heat is not generated during mixing
D. the solution will not boil at 100°C
26. Which of the following substances is mixture?
A. Sulphur powder
B. Bronze
C. Distilled water
D. Ethanol
27. A mixture of sand, ammonium chloride and sodium chloride is best separated by
A. sublimation followed by addition of water and filtration
B. sublimation followed by addition of water and evaporation
C. addition of water followed by filtration and sublimation
D. addition of water followed by crystallization and sublimation
28. A pure solid usually melts
A. over a wide range of temperature
B. over a narrow range of temperature
C. at a lower temperature than the impure one
D. at the same temperature as the impure one
29. Chromatography is used to separate components of mixtures which differ in their rates of
A. diffusion
B. migration
C. reaction
D. sedimentation
30. Which of the following is an example of chemical change?
A. Dissolution of salt in water
B. Rusting of iron
C. Melting of ice
D. Separating a mixture by distillation
31. The postulate of Dalton's atomic theory which still hold is that
A. particles of different elements combine in a simple whole number ratio
B. atoms can neither be created nor destroyed
C. the particles of the same element are exactly alike

D. all element are made of small indivisible particle

32. What is the percentage by mass of oxygen in $\text{Al}_2(\text{SO}_4)_3 \cdot 2\text{H}_2\text{O}$?
- 14.29%
 - 25.39%
 - 50.79%
 - 59.25%
33. $3\text{Cu} + p\text{HNO}_3 \longrightarrow 3\text{Cu}(\text{NO}_3)_2 + 4\text{H}_2\text{O} + x\text{NO}$. In the equation above, the values of p and x respectively are
- 1 and 3
 - 2 and 3
 - 6 and 2
 - 8 and 2
34. A compound contains 40.0% Carbon, 6.7% Hydrogen, 53.3% Oxygen. If the molar mass of the compound is 180, find its molecular formula
- CH_2O
 - $\text{C}_3\text{H}_6\text{O}_3$
 - $\text{C}_6\text{H}_{12}\text{O}_6$
 - $\text{C}_6\text{H}_6\text{O}_3$
35. If a solution contains 4.9g of tetraoxosulphate (VI) acid, calculate the amount of copper (II) oxide that will react with it
- 0.8g
 - 4.0g
 - 40.0g
 - 80.0g [Cu = 64, O = 16, S = 32, H = 1]
36. How many moles of limestone will be required to produce 5.6g of CaO?
- 0.20mol
 - 1.12mol
 - 0.10mol
 - 0.56mol
37. What is the molar mass of a substance, if 0.4mol of the substance has a mass of 25.0g
- 6.3g
 - 40.0g
 - 62.5g
 - 2.5g
38. $2\text{C}_2\text{H}_2 + 5\text{O}_2 \longrightarrow 4\text{CO}_2 + 2\text{H}_2\text{O}$. In the reaction above, the mass of carbon dioxide produced on burning 78g of ethyne is
- 39g
 - 352g
 - 264g
 - 156g [C = 12, O = 16, H = 1]
39. $\text{MnO}_2(\text{s}) + x\text{HCl}(\text{aq}) \longrightarrow \text{MnCl}_2(\text{aq}) + y\text{H}_2\text{O}(\text{l}) + z\text{Cl}_2(\text{g})$. In the equation above, what are the values of x, y, and z respectively?
- 4, 1, 2
 - 1, 2, 1

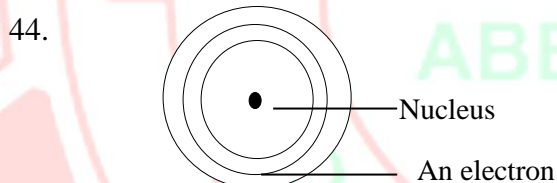
- C. 2, 1, 2
D. 4, 2, 1



41. Two atoms represented as $^{235}_{92}\text{U}$ and $^{238}_{92}\text{U}$ are
A. isomers
B. allotropes
C. isotopes
D. anomers

42. The number of electrons in the valence shell of an element of atomic number 14 is
A. 1
B. 2
C. 3
D. 4

43. Which of the following physical properties decreases down a group in the periodic table?
A. Atomic radius
B. Ionic radius
C. Electropositivity
D. Electronegativity



The diagram above represents an atom.

- A. magnesium
B. helium
C. chlorine
D. neon
45. Use the section of the periodic table below to answer questions 45 and 46

1							2^L
3^G	x	5	6	7	8^J	9^E	10
11	12^M	13^R	14	15	16	17	18

Which of the letters indicate an alkali metal and a noble gas respectively?

- A. M and E
B. G and E
C. R and L
D. G and L
46. Which letter represents a non-metal that is a solid at room temperature?
A. T.

- B. R.
- C. J.
- D. X.

47. In the oil drop experiment, Milikan determined the
- A. charge to mass ratio of the electron
 - B. mass of the electron
 - C. charge of the electron
 - D. mass of the proton
48. Which of the following statements is FALSE about isotopes of the same element?
- A. They have the same number of electrons in their outermost shells
 - B. They have different atomic masses
 - C. They have the same atomic number and the same number of electrons
 - D. They have the same atomic number but different number of electrons
49. The electron configuration of 2 elements with similar chemical properties are represented by
- A. $1s^2 2s^2 2^5$ and $1s^2 2s^2 2p^4$
 - B. $1s^2 2s^2 2p^4$ and $1s^2 2s^2 2p^6 3s^1$
 - C. $1s^2 2s^2 2p^6 3s^1$ and $1s^2 2s^1$
 - D. $1s^2 2s^2 2p^4$ and $1s^2 2s$
50. In the periodic table, what is the property that decreases along the period and increases down the group
- A. Atomic number
 - B. Electron affinity
 - C. Ionization potential
 - D. Atomic radius.