

UNIVERSITY OF UYO, UYO
POST-UME SCREENING EXERCISE 2006/2007 SESSION
CHEMISTRY 2006/2007

INSTRUCTION: From the options lettered A-D, pick the correct answer and shade accordingly

1. A compound contains 31.91% potassium, 23.93% chlorine and the rest oxygen. What is the chemical formula of the compound? (A) KClO_4 (B) KClO (C) KClO_2 (D) KClO_3 (k=39, Cl =35.5, O=16).
2. The chromatographic separation of ink is based on the ability of the component to: (A) react with the solvent (B) React with each other (C) dissolve each other in the column (D) move at different speed in the column
3. Which of the following gases contains the least number of atoms at S.T.P? (A) 1 mole of butane (B) 3 moles of ozone (C) 4 Moles of Chlorine (D) 7 moles of argon
4. What amount of mercury would be liberated if the same quantity of electricity that liberate 0.65g of zinc is applied? (A) 2.01g (B) 1.00g (C) 4.02g (D) 8.04g (Zn = 65, Hg =201)
5. When dissolved in water NaOH flakes shows A. An endothermic change (B) an exothermic change (C) a slow reaction (D) a rapid reaction
6. The product of the electrolysis of dilute sodium hydroxide using platinum electrodes are A. hydrogen and oxygen gases (B) water and hydrogen gases (C) water and sodium metal (D) sodium metal and hydrogen gas
7. Tetraoxosulphate(vi) acid burns the skin by (A) hydrolysis (B) Hydration (C) heating (D) dehydration .
8. 25cm³ of a 0.2 moldm⁻³ solution of Na_2CO_3 requires 20cm³ of a solution of HCL for neutralization. The concentration of HCL solution is (A) 0.5 moldm⁻³ (B) 0.6 moldm⁻³ (C) 0.2 moldm⁻³ (D) 0.4 moldm⁻³
9. The property which makes alcohol soluble in water is the: (A) boiling point (B) hydrogen bonding (C) ionic character (D) covalent nature
10. The gas that gives brown coloration in brown ring test is (A) NO (B) CO₂ (C) NO₂ (D) CO
11. A change in the temperature of saturated solution disturbs the equilibrium between the (A) solvent and the undissolved solute (B) dissolved solute and the solution (C) dissolved solute and the solvent (D) dissolve solute and the undissolved solute
12. A liquid that will dissolve fat is (A) kerosene (B) hydrochloric acid (C) water (D) calcium hydroxide

13. A consequence of global warming is (A) increased humidity (B) flooding (C) water pollution (D) Air pollution
14. when 10g of sodium hydroxide dissolved in 1000cm³ of water, the solution formed is approximately (A) 0.50 moldm⁻³ (B) 0.01 moldm⁻³ (C) 0.10moldm⁻³ (D) 0.25moldm⁻³ (Na=23. H=10=16)
15. Which of the following can electrolyte? (A) Mercury (B) alcohol (C) sodium acetate solution (D) solid potassium hydroxide
16. Which of the following is found in cotton? (A) fat (B) starch (C) of (D) cellulose
17. The process by which atoms are rearranged into different molecular structures in the petroleum refining process is referred to as (A) Polymerization (B) reforming (C) hydrocracking (D) catalytic cracking
18. The type of reaction that is peculiar to benzene is (A) Hydrolysis (B) addition C. Substitution (D) Polymerization
19. Carbohydrates are compounds containing carbon, hydrogen and oxygen in the ratio: (A) 1:1:1 (B) 1:2:1 (C) 2:1:1 (D) 3:1:1
20. A compound containing 40% carbon, 6.7% hydrogen and 53.3% oxygen. If the molar mass of the compound is 180, find the molecular formula (A) C₆H₆O₃ (B) C₆H₁₂O₆ (C) C₃H₆O₃ (D) CH₂O
21. If sulphur (IV) oxide and methane are released simultaneously at the opposite ends of a narrow tube, the rates of diffusion R_{SO₂}, and R_{CH₄} will be in the ratio: (A) 4:1 (B) 2:1 (C) 1:12 (D) 1:4 (S=32, O = 16, H =1).
22. The soil around a battery manufacturing factory is likely to contain a high concentration of (A) Ca²⁺ salts (B) Pb²⁺ salts (C) Mg²⁺ salts (D) Al³⁺ salts
23. The pH of a solution obtained by mixing 100cm³ of a 0.1M HCl solution with 100cm³ of a 0.2M solution of NaOH is: (A) 1.3 (B) 7.0 (C) 9.7 (D) 12.7
24. What mass of gold is deposited during the electrolysis of gold (III) tetraoxosulphate (VI) when current of 15 A is passed for 193 seconds? (A) 1.97g (B) 3.94g (C) 5.91g (D) 19.70g (Au = 197, F =96500C)
25. A common characteristic shared by iron and, aluminum is that both (A) are extracted by electrolysis (B) form only basic oxides (C) show oxidation states of +2 and + 3 (D) form soluble hydroxide.

ANSWERS TO UNIUYO PUME CHEMISTRY 06/07 SESSION

1A 2C 3D 4A 5B 6A 7B C9 10A 11C 12C 13B 14B 16D 17D 18C 19 B 20B 21A 22B 23 B 24 25A

UNIVERSITY OF UYO, UYO
POST-UME SCREENING EXERCISE 2007/2008 SESSION
CHEMISTRY 2007/2008

INSTRUCTION: From the options lettered A-D, pick the correct answer and shade accordingly

1. Elements X and Y have electronic configurations $1s^2 2s^2 2p^4$ and $1s^2 2s^2 2p^6 3s^2$ when they combine; formula of the compound formed is (A) XY (B) X_2Y_4 (C) XY_2 (D) YX.
2. The atomic number of an element is 55 and its atomic mass is 133. the nucleus of the atom therefore contains (A) 78 protons and 55 neutrons (B) 55 protons and 78 neutrons (C) 55 protons and 78 electrons (D) 78 protons and 55 neutrons
3. Which of the following would support the conclusion that a solid sample is a mixture (A) The Solid can be ground to a fine powder (B) The density of the solid is 2.25g/dm³ (C) the solid has a melting point range of 300°C TO 375°C (D) the solid is hygroscopic.
4. What is the partial pressure of hydrogen gas collected over water at standard atmospheric and 25°C if the saturation vapour pressure of water is 23mmHg at that temperature? (A) 737mmHg (B) 763mmHg (C) 777 mmHg (D) 783mmHg.
5. The mole ratio of carbon and hydrogen of a volatile liquid compound is 1:2.0.12g of the liquid on evaporation at s.t.p gave 32cm³ of vapour. The molecular formula of the liquid is (A) C_3H_8 (B) C_4H_8 (C) C_5H_{10} (D) C_6H_{12} [GMV = 22.4DM³].
6. Carbon exists naturally in the combined state as (A) diamond (B) coal (C) wood (D) graphite
7. The sulphide which is insoluble in dil. HCl is (A) CuS (B) Na_2S (c) FeS (D) ZnS .
8. In the industrial production of H_2 from natural gas, CO_2 produced along with the H_2 is removed by (A) passing mixture into lime water (B) washing under pressure (C) drying over P_2O_5 (D) Using Ammonical Cu_2Cl
9. Which of the following typically represent a photochemical reaction? (a) Conversion of N_2O_4 to NO_2 (B) conversion of Ag halides to metallic Ag (C) decomposition of $Ca(OH)_2$ to its oxide (D) formation of H_2O from H_2 and O_2 molecules.
10. One mole of a hydrocarbon contains 36g of carbon and its vapour density is (A) $CH_3CH_2CH_3$ (B) $CH_3CH=CH_2$ (C) $CH_3CH_2C \equiv H$ (D) $CH_3C \equiv CH$
11. Nigerian crude oil is described as light because of its (A) low aliphatic-hydrocarbon content (B) low sulphur content (D) high natural gas content (D) high octane number.

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12. Detergent are manufactured with straight hydrocarbon chains so as to make them (A) soluble (B) cheaper (C) non-biodegradable (D) biodegradable
13. $5\text{CH}_2-4\text{CH}_2-3\text{CH}_2-\text{C}(\text{CH}_3)_2$
In the structure above carbon two and three are respectively (A) sp^2 and sp^3 -hybridized (B) 20 and 10 (C) sp^3 hybridized and 30 (D) sp -hybridized and 30
14. A solution of calcium bromide contains 20dm^3 . What is the molarity of the solution with respect to calcium bromide and bromide ions? (A) 0.1 (B) 0.1,0.2 (C) 0.1,0.05 (D) .005,0.1
15. A quantity of electricity liberates 7.2g of Ag from its salt what mass of Al will be liberated from salt by the.
16. In spite of the electronic configuration of carbon of $1s^2 2s^2 2p^2$ the atom is tetravalent because (A) the electrons in both 2s and 2p orbital have equal energy
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