Test # 2 **Name** _____

Directions: Each question has only one correct answer. Mark with X one of the lettered choices.

1. Which is inconsistent with the concept of an isotope?

A) same atomic number B) different number of neutrons

C) same mass number D) same number of protons

2. Which of the following isotopes has the greatest number of neutrons?

A) $_{17}^{35}Cl$ B) $_{15}^{31}P$ C) $_{18}^{40}Ar$ D) $_{20}^{41}Ca$

3. The elements that display the greatest nonmetallic character are located toward which corner of the periodic table?

A) upper left B) lower right C) lower left D) upper right

4. Which compound contains no ionic character?

A) NH_4Cl B) CO C) Na_2O D) Na_2CO_3

5. Which of these describes the rate of the chemical reaction $I_2 + H_2 \longrightarrow 2\ HI$?

A) an increase in the concentration of HI and H_2 with time

B) an increase in the concentration of HI with time

C) an increase in H_2 and I_2 with time

D) a decrease in HI and I_2 with time

6. What kind of change will shift the reaction $NH_4Cl + \text{heat} \rightleftharpoons NH_3 + HCl$ to the right to form more products?

A) a decrease in total pressure B) an increase in the concentration of HCl

C) an increase in the pressure of NH_3 D) a decrease in temperature

7. Which of the reaction shown below involves the formation of an ionic precipitate from a solution?

A) $Ca^{2+} + CO_3^{2+} \longrightarrow CaCO_3$ B) $HCO_3^- + H^+ \longrightarrow H_2CO_3$

C) $Fe + Cu^{2+} \longrightarrow Fe^{2+} + Cu$ D) $CaCO_3 + H_2CO_3 \longrightarrow Ca(HCO_3)_2$

8. Given the following process that has reached equilibrium: $NaCl_{(s)} \rightleftharpoons NaCl_{(aq)}$. For the phase equilibrium to exist, the $NaCl_{(aq)}$ must be a solution that is:

A) concentrated B) saturated C) supersaturated D) unsaturated

9. Species that, in water, can function as both, a Brønsted acid and a Brønsted base include which of the following?

A) HCO_3^- B) H_2CO_3 C) $HClO_4$ D) CO_3^{2-}

10. Which of the following dilute solutions has the highest concentration of OH^- ions?

A) 0.010 mol/L HCl B) 0.010 mol/L NaOH
C) 0.010 mol/L CH_3COOH D) 0.010 mol/L NH_4OH

11. All of the following statements about HNO_3 are true except:

A) it is strong oxidizing agent B) it reacts with CaO
C) it is highly corrosive D) its salts are called nitrites

12. Which of the oxides does not react with CO_2?

A) Na_2O B) SO_2 C) CaO D) K_2O

13. Of the compounds below, in which one does chlorine have the highest oxidation number?

A) HCl B) $KClO_4$ C) HOCl D) $CaCl_2$

14. Which of these reactions shows only reduction?

A) $Cu^{2+} + 2e^- \longrightarrow Cu$ B) $Fe_2O_3 + 3CO \longrightarrow 2Fe + 3CO_2$
C) $HCl + NaOH \longrightarrow NaCl + H_2O$ D) $Mg + ZnSO_4 \longrightarrow Zn + MgSO_4$

15. Which substance is manufactured by heating limestone?

A) $Ca(OH)_2$ B) CaO C) CaC_2 D) Na_2CO_3

16. The third member of alkyne series is:

A) methyne B) ethyne C) propyne D) butyne

17. Molecules of 1-propanol and 2-propanol have different:

A) percentage compositions B) molecular masses
C) molecular formulas D) structural formulas

18. Which two compounds are not isomers of each other?

A) $CH_3CH_2CH_2Cl$ and $CH_3CHClCH_3$ B) CH_3CH_2OH and CH_3OCH_3

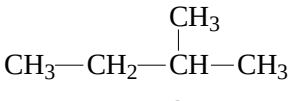
C) CH_3COOH and CH_3CH_2COOH D) CH_3COCH_3 and CH_3CH_2CHO

19. All carbon-carbon bonds in saturated hydrocarbon molecules are:

A) single covalent B) double covalent

C) triple covalent D) coordinative covalent

20. In the compound



which hydrogen is most easily abstracted in a radical bromination reaction?

A) 1 B) 2 C) 3 D) 4

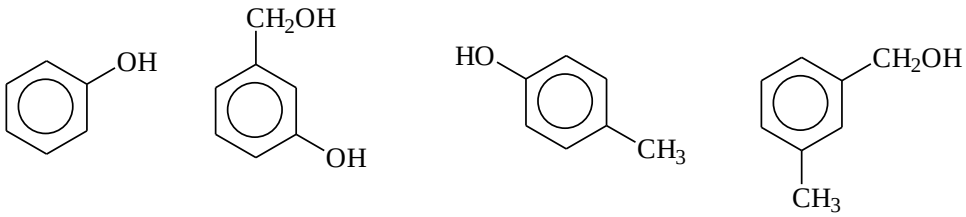
21. For the polymer polyvinyl chloride ~$CH_2CH(Cl)CH_2CH(Cl)CH_2CH(Cl)$~ the repeating subunit is:

A) CH(Cl) B) $CH(Cl)CHCH_2$ C) CH_2CH D) $CH_2CH(Cl)$

22. A molecule of which alcohol contains more than one hydroxyl group?

A) propanol B) butanol C) pentanol D) glycerol

23. Which of the following compounds is not a phenol?



A) B) C) D) D)

24. Which structure contains a ketone grouping?

A) $CH_3—C(=O)—OCH_3$ B) $CH_3—C(=O)—O—C(=O)—CH_3$ C) $CH_3—C(=O)—NHCH_3$ D) $CH_3—C(=O)—CH_3$

D)

25. Oxidation of pentanal produces:

A) pentanol B) pentanoic acid C) pentanone D) pentanoate

26. Which of the following processes is esterification?

A) $C_6H_5OH + NaOH \longrightarrow C_6H_5ONa + H_2O$

B) $C_2H_5OH + HONO_2 \longrightarrow C_2H_5ONO_2 + H_2O$

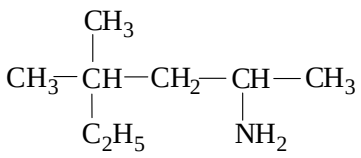
C) $CH_3COOH + NaOH \longrightarrow CH_3COONa + H_2O$

D) $2C_2H_5OH + 2Na \longrightarrow 2C_2H_5ONa + H_2$

27. Some of the molecules found in the human body are NH_2CH_2COOH (glycine), $C_6H_{12}O_6$ (glucose), and $CH_3(CH_2)_{16}COOH$ (stearic acid). The bonds they form are:

A) nuclear B) metallic C) ionic D) covalent

28. The correct name of the compound below is:



A) 4-ethyl-4-methyl-2-amonopentane

B) 4,4-dimethyl-2-aminohexane

C) 2-ethyl-2-methyl-4-aminopentane

D) 3,3-dimethyl-5-aminohexane

29. Glucose and fructose are:

A) enantiomers B) functional isomers

C) tautomers D) chain isomers

30. When the amine group of one amino acid reacts with the carboxylic acid group of another amino acid, the resulting functional group formed is called:

A) an amine B) an amide C) an ester D) a polymer