D) H_2O

Test # 1 Name _____

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

1. The mass number and atomic number of the lithium atom are shown by the symbol ${}_{3}{}^{7}Li$. What is the correct symbol for the lithium ion in lithium chloride?

	A) 2 ⁶ Li ⁻	B) 3⁶Li ⁺	C) ${}_{3}{}^{7}Li^{+}$	D) $_{3}^{7}Li^{-}$
--	-----------------------------------	--	-------------------------	---------------------

2. In period 3 of the periodic table the atom with the largest atomic radius is located in group:

A) 1	B) 3	C) 5	D) 7

3. Which molecule is a	polar molecule?	
A) N ₂	B) CH ₄	C) CO ₂

4. Which substance has a polar covalent bond between its atoms?

	A) NaH	B) NaCl	C) F ₂	D) NH ₃
--	--------	---------	-------------------	--------------------

5. Dinitrogen tetroxide, N₂O₄, breaks down into nitrogen dioxide, NO₂.

$$N_2O_4(g) \rightleftharpoons 2NO_2(g)$$

The reaction is reversible and endothermic. Which conditions will give the largest yield of nitrogen dioxide?

A) high temperature and high pressure	B) low temperature and low pressure
C) high temperature and low pressure	D) low temperature and high pressure

6. All of the factors listed below increase the rate of reaction $CH_3COOH + CH_3OH \longrightarrow$ except:

A) increase in pressure	B) adding of catalyst
C) increase in temperature	D) increase in methanol concentration

7. Which of the following dilute solutions has the lowest pH?

A) 0.010 mol/L HCl	B) 0.010 mol/L NaOH
C) 0.010 mol/L CH ₃ COOH	D) 0.010 mol/L NH ₄ OH

- 8. All of the following can act as Brønsted-Lowry acid (proton donors) in aqueous solution except:
 - A) HI B) HCO_3^- C) H_2S D) NH_3
- 9. Which of the reactions shown below represents an oxidation-reduction reaction?

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) $CaCO_3 + H_2CO_3 \longrightarrow Ca(HCO_3)_2$

10. Of the compounds below, in which one does nitrogen have the highest oxidation number?

A) NH₃ B) HNO₃ C) NaNO₂ D) NO₂

- 11. The reverse of the neutralization reaction is called:A) hydrationB) esterificationC) hydrolysisD) electrolysis
- 12. Which of the metals does not react with diluted H₂SO₄?A) CuB) NiC) MgD) Cr

13. All of the following statements about carbon dioxide are true except:

- A) it can be prepared by the action of acid on limestone
- B) it is used to extinguish fires
- C) it dissolves in water at room temperature
- D) it sublimes rather than melts at 20°C and 1 atmosphere pressure
- 14. The reaction of sulfur and oxygen is the best presented by the equation:

A) $2 \text{ S} + \text{O}_2 \rightarrow 2 \text{ SO}$	B) S + O ₂ \rightarrow SO ₂
C) $S + 2O_2 \rightarrow SO_4$	D) S + O \rightarrow SO.

- 15. The reaction between magnesium and diluted hydrochloric acid produces:
 - A) O_2 B) H_2 C) N_2 D) CO
- 16. Which formula represents a saturated hydrocarbon?
 - A) C_2H_2 B) C_2H_4 C) C_3H_6 D) C_3H_8

17. Compounds that have the same composition but differ in their structural formulas:

A) are called isomers	B) are called polymers

C) have the same properties D) are usually alkanes

18. The reaction $C_2H_4 + H_2 \implies C_2H_6$ is an example of:A) additionB) substitutionC) eliminationD) condensation

19. Considering the Markovnikov's rule, which of the following is the major product of the reaction between 2-methyl-2-butene and HCl?

$$\begin{array}{cccc} CH_3 & Cl & CH_3 \\ A) & CH_3 - CH_2 - CCl - CH_3 & B) & CH_3 - CH - CH_3 \\ CH_3 & CH_3 - CH_2 - CH_2 - CH_3 & CH_2 Cl \\ C) & CH_2Cl - CH_2 - CH_3 & D) & CH_3 - CH_2 - CH_3 \\ \end{array}$$

20. The compound CH₃COOC₂H₅ is classified as:

A) a hydrocarbon B) an ester C) a	an alcohol D)) an acid
-----------------------------------	---------------	-----------

21. Which organic structure is ethanoic acid?

A) CH_3CH_2C O OH B) CH_3C O OH C) HC O OH D) CH_3CHC O CH₃ OH B) CH_3CHC O OH CH₃ OH B) CH_3CHC O OH B) CHC_3CHC O OH B) CHC_3CHC O OH B) CHC_3CHC O OH B) CHC_3CHC O OH B) CHC O OH B

22. Which of the following reactions does not produce salt?

A)
$$\longrightarrow$$
 OH + NaOH \longrightarrow B) HCOOH + Na₂CO₃ \longrightarrow

- C) $CH_3CH_2NH_2 + H_2SO_4 \longrightarrow D$ $CH_3CH_2CH_2OH + NaOH \longrightarrow D$
- 23. Which of the following compounds has an enantiomer?

24. Addition of hydrogen to aldehydes produces:

A) secondary alcohols

C) alkanes

B) carboxylic acids

D) primary alcohols





25. According to IUPAC rules, the name of the molecule

- A) phenyl propanoateB) benzyl propanoate
- C) propanoyl benzene D) propyl benzoate
- 26. Which compound is an amide?

A) C ₆ H ₅ -CONH ₂	B) C ₆ H ₅ -CN
C) C ₆ H ₅ -CH ₂ -NH-C ₆ H ₅	D) C ₆ H ₅ -COONH ₂

27. The building unit of starch is:

A) α-glucose	B) α - and β -glucose
C) α -glucose and α -manose	D) β-glucose

28. Which of these is a secondary amine?

O	CH ₂ CH ₃	
A) $CH_3 - C - NH_2$	B) CH ₃ CH ₂ NCH ₂ CH ₃	
C) CH ₃ CH ₂ NH ₂	D) CH ₃ CH ₂ NHCH ₃	D)

29. Decarboxylation of heptanoic acid produces carbon dioxide and:

A) hexane	B) benzene	C) cyclohexane	D) hexene
-----------	------------	----------------	-----------

30. Peptides are:

- A) products of amino acids polymerization
- B) polyamides of amino acids
- C) polyesters of amino acids
- D) salts obtained after neutralization of amino groups with carboxylic groups of amino acids