Key

Test Prep for Lecture Test 2

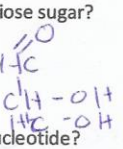
1. State the different types of Hydrocarbons and describe them.
   a. Alkane - Single bonds, Saturated
   b. Alkene - has at least 1 double bond, unsaturated
   c. Alkyne - has at least 1 triple bond, unsaturated.
2. Isomers are organic compounds with the same molecular formula, but different structural formulas.
3. What is a polymer?
   A large, long chain ~~of~~ molecule made up of smaller repeating units called monomers.
4. What is an aromatic Hydrocarbon?
   Carbons that contain a Benzene ring.
5. What is the longest chain of Hydrocarbons called?
   Parent Chain.
6. Substrate Is the substance that is acted on by an enzyme.
7. What are the types of carbohydrates, please describe them.
   a. monosaccharides - 1
   b. disaccharides - 2
   c. Polysaccharides - many

8. What is the primary protein structure?
   a. The Order of amino acids.

9. What is an active site when discussing enzymes?
   region of an enzyme that binds to the substrate to catalyze the reaction.

10. What is a codon?
    A sequence of 3 nucleotides with their associated bases.

11. How many carbon atoms are in a triose sugar?
    3



12. What are the different parts of a nucleotide?
    > Phosphate group > Sugar Molecule (DNA or RNA)
    > nitrogenous bases

13. gene is a sequence of codons within a DNA molecule that codes for a single protein.

14. Describe transcription:
    The synthesis of mRNA from DNA.

15. There are 20 amino acids, and 64 possible codons.

16. What is Bio-Chemistry?
    The study of Chemical substances + processes that occur in plants, animals, + microorganisms.

17. In which direction would a reaction with a Kc value of 4.4X 10^4 proceed?

Right - greater than 1, Products greater than reactants.

18. Given the following, what is the concentration of O2?

2SO3(g)<----> 2SO2+O2

Kc= 7.63X10^-2

[SO3]= 0.187M

[SO2]= 0.126M

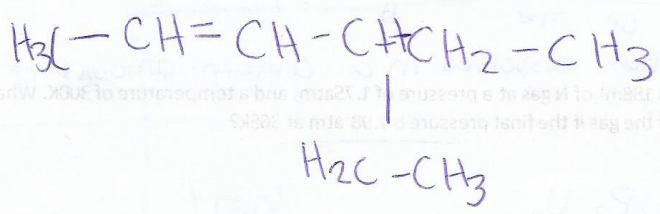
$$\frac{[\text{Products}]}{[\text{reactants}]}$$

Shifts Left, reactants greater

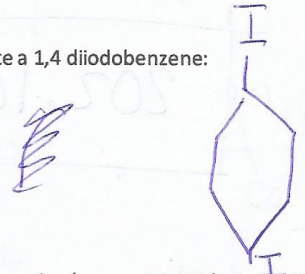
$$7.63 \times 10^{-2} = \frac{[0.126M]^2 + [X]}{[0.187]^2}$$

$O_2 = -2.908 \times 10^{-2}$

19. Illustrate a 4 ethyl 2 hexene



20. Illustrate a 1,4 diiodobenzene:



21. Beta is when a neutron changes into a proton.

Decay

22. What is a glycosidic linkage?

When 2 monosaccharides react + eliminate water to form a Carbon-Oxygen-Carbon bond.

23. What is ionization energy?

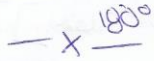
~~Ea~~ Amount of energy needed to remove an electron from a gaseous atom in it's ground State.

24. Dopersion forces are the weakest intermolecular forces.

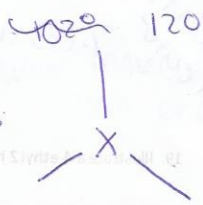
25. Describe and draw the molecular shapes:

Bent

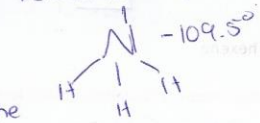
Linear



Trigonal Planar



Tetrahedral



26. What is solubility?

The amount of the Compound that dissolves in a certain amount of Solvent at a certain Temp.

27. A cylinder contains 188ml of N gas at a pressure of 1.75atm, and a temperature of 300K. What is the final volume of the gas if the final pressure is 1.98 atm at 365k?

$$\frac{P_1 V_1}{T_1} = \frac{P_2 V_2}{T_2}$$

$$\frac{(1.75)(188)}{300K} = \frac{(1.98)(X)}{365K}$$

1.096

202.16ml

~~$V_1 = 3L$~~

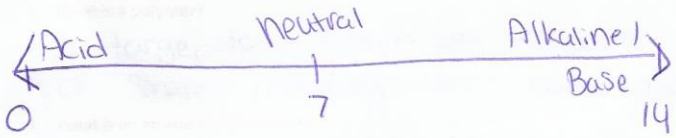
28. What is the molarity of a solution made by dissolving 1.32 moles of LiNo3 in 6.0 L of solution?

~~$C_1V_1 = C_2V_2$~~ ~~if the Molarity of the original is 3.0 mol~~

~~L3~~

$$\frac{1.32 \text{ mol } LiNO_3}{6.0L} = 0.22M$$

29. Draw and label the pH scale:



30. What is the percent by mass of ethanol (C_2H_5OH) in a 1.5m solution?

C in

$$\frac{1.5m \mid 46.08g}{1mol} = 69.12g \text{ ethanol}$$

$$\frac{36.03g}{69.12g} = 52.13\%$$

12.01
12.01
6.06
16.00

~~$\frac{24.02g\ C}{69.12g} = 34.75\%$~~

$$\frac{1.5 \mid 24.02g}{1mol} = 36.03g\ C$$