# Hill Side School

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**44**

**Full Name** _____ **Grade - 11** **Section** _____ **4th**

**Quarter Final Exam**

**Subject - Chemistry** **Year: 2012 E.C** **Exam Room:**

## I. *Write true if the statement is correct or false if it is incorrect on the separate answer sheet provided.*

1. There is no difference between soaps and detergents
2. For exothermic reactions the yield of products is increased by performing the reaction at lower temperature
3. Removing the products from the reaction vessel shifts the reaction in the forward direction
4. It is not possible to prepare esters in the laboratory.
5. vapour pressure is the pressure exerted by vapour of liquid at a given temperature

## II. *Match the items in column 'A' with the items in column 'B'.*

| *Column "A"* | *Column "B"* |
|---|---|
| 1. Soaps | A. – C(=O) – |
| 2. Carboxyl group | B. – C(=O) – O – |
| 3. Detergents | C. – C(=O) – OH |
| 4. Ester group | D. R – C(=O) – $O^{-}$ $K^{+}$ |
| 5. Carbonyl group | E. R – S(=O)(=O) – $O^{-}$ $Na^{+}$ |

## III. *Choose the correct answer from the given alternatives.*

1. what is the equilibrium constant expression for the reaction:

   $Aq^{+}(aq) + 2NH_3(aq) \rightleftarrows Aq(NH_3)_2^{+}(aq)$

   A. ¿¿ C. ¿ $[NH_3]^2$

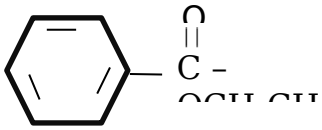
   B. ¿¿ D. ¿¿

2. When "Tella" is kept open for some time, it becomes sour due to the formation of

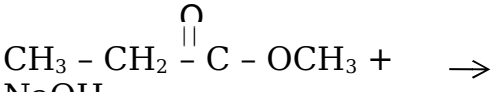
   A. Methanoic acid B. benzoic acid C. ethanoic acid D. tolune

3. For the reactions A ⟶ B and B ⟶ A, the rate constants are $8x10^{2}S^{-1}$ and 5.2 x $10^{4}S^{-1}$ respectively. What is the value of the equilibrium constant for the equilibrium A ⇄ B?
   A. 1.54 x $10^{-3}$ B. 1.54 x $10^{-2}$ C. 6.5 x $10^{-3}$ D. 6.5 x $10^{-2}$

4. Fats and oils belong to a class of biomolecules called
   A. proteins B. carbohydrates C. lipids D. organic acids
5. The value of the equilibrium constant changes with
   A. pressure C. Temperature
   B. concentration of the reactant D. Catalyst
6. At a certain temperature for the reaction $2NO(g) + O_2(g) \rightleftarrows 2NO_2(q)$, the equilibrium concentrations are $[NO]=0.52\,M$, $[O_2]=0.24\,M$, $[NO_2]=0.18\,M$ What is the value of Kc at this temperature
   A. 00.063 B. 0.50 C. 1.4 D. 2.0
7. If the equilibrium constant for reaction $2NO(g) \rightleftarrows N_2(g) + O_2(g)$ is Kc = 3.6 x $10^{3}$ at 275k, then what will be the value of Kc for the reaction $N_2(g) + O_2(g) \rightleftarrows 2NO(g)$?
   A. 2.70 x $10^{-4}$ B. 2.70 x $10^{4}$ C. 12.96 x $10^{4}$ D. 3.60 x $10^{3}$
8. At $950^{0}$c, Kc = 0.0108 for the reaction
   $CaCO_3(s) \rightleftarrows CaO(s) + CO_2(g)$. A mixture of 25g $CaCO_3$, 25g CaO and 15g $CO_2$ is placed in a 10*l* vessel at $950^{0}$c. What will happen to the amount of $CaCO_3$ at equilibrium?
   A. It will increases B. It will decreases C. It will remain the same D. None
9. The organic compound $CH_3COCH_3$ is
   A. aldehyde B. ester C. carbonyl D. ketone
10. What is the name of the following compound?



   A. Benzoate ester B. Ethyl benzoate C. Phenyl butyrate D. Ethyl benzyl ketone
11. What is the name of a base-promoted ester hydrolysis reaction?
   A. Acylation B. Esterification C. Condensation D. Saponification
12. Consider the reaction



What is the product of this reaction?
   A. Sodium acetate and ethanol
   B. Sodium acetate and methanol
   C. Sodium propionate and methanol
   D. Methyl propionic acid and methanol

13. Which of the following does not contain oxygen?
    A. Methane B. Methanol C. Methanoic acid D. Methanal
14. The conversion of ester in to alcohol and carboxylic acid is
    A. Esterification B. Saponification C. Dehydration D. Hydrolysis
15. A chemical name for aspirin is
    A. acetyl salicylic acid C. methyl salicylate
    B. salicylic acid D. Sodium salicylate
16. The IUPAC name of $(CH_3)_3\ CCH_2COOH$ is
    A. 3, 3-dimethyl butanoic acid C. Hexanoic acid
    B. 3 –methyl pentanoic acid D. 2, 3 –dimethyl butanoic acid
17. Which of the following is the most acidic compound?
    A. $CH_3OH$ B. $(CH_3)_3COH$ C. $CH_3COOH$ D. $C_2H_5OH$

18. For the gaseous reaction,
    PA + qB $\rightleftarrows$ qC + PD which of the following relationships is true?
    A. Kp = kc C. $Kp = Kc\ (RT)^{p-q}$
    B. $Kp = Kc(RT)^{p+q}$ D. $Kp = Kc = (RT)^{p+q}$
19. If the gas mixture for the reaction
    $N_2O_4(g) \rightleftarrows 2NO(g)$ is compressed, then
    A. Products are favoured C. No change
    B. Reactants are favoured to reactants D. Product concentration become equal
20. one of the important methods for preparation of carboxylic acid is
    A. oxidation B. hydration C. hydrogenation D. neutralization
21. Ethyl ethanoate is formed from
    A. ethanol and ethanoic acid C. ethanol and methanoic acid
    B. ethanol and methanol D. Propanol and methanol
22. Sodium and potassium salts of long chain fatty acids are called
    A. Detergent B. Baking Soda C. Chile salt peter D. Soap
23. Which of the following statements describe a system that is at equilibrium?
    A. The rate constants for the forward and reverse reactions are equal.
    B. The concentrations of reactants and products are equal.
    C. The reaction ceases.
    D. The forward and reverse rates are equal.
24. The equilibrium constant for reaction (1) is k. What is the equilibrium constant for the reaction (2)?

    $SO_2(g) + \frac{1}{2}\ O_2(g) \rightleftarrows SO_3(g)$ --- (1)

    $2SO_3(g) \rightleftarrows 2SO_2(g) + O_2(g)$ ---- (2)

    A. $k^2$ B. 2k C. $\frac{1}{2k}$ D. $\frac{1}{k^2}$
25. The equilibrium constant for the following reaction $3H_2(g) + CO(g) \rightleftarrows CH_4(g) + H_2O(g)$ is 3.93 at 1200k. A system at equilibrium has $[CO]$ = 0.1522M, $[H_2]$ = 0.1566M and $[H_2O]$ = 0.0478M. What is the value of $[CH_4]$?
    A. 0.0421 B. 0.0452 C. 0. 0481 D. 0.0510

26. Which one of the following organic molecules has the highest water solubility?
    A. $HOOCCH_2$ COOH
    B. $CH_3CH_2CH_2COOH$
    C. $HOOCCH_2CH_2COOH$
    D. $CH_3CH_2CH_2CH_2COOH$
27. Which catalyst is used in the hydrogenation of vegetable oils?
    A. Iron B. Nickel C. Platinum D. molybdenum
28. An alcohol produced in the manufacture of soap is
    A. glycerol B. butanol C. ethanol D. methanol
29. The degree of freedom of water at its triple point is
    A. 0 B. 1 C. 2 D. 3
30. pleasant smelling is the characteristics of
    A. Alcohols B. aldehydes C. carboxylic acids D. esters

## IV. ***Work out***

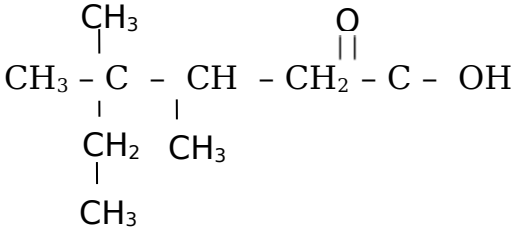
1. By what process is margarine prepared from oils?
2. Describe the number of components present in the following systems.
    a) solution of sugar in water
    b) a mixture of benzene and water
3. Given $Pcl_5a(g) \rightleftarrows PCl_3(g) + Cl_2(g)$, $\Delta H = +92KJ$ how will each of the following influence the system at equilibrium?
    a) Increasing temperature C. Increasing concentration of $PCl_5$
    b) increasing pressure D. adding a catalyst
4. write the molecular formula for a saturated monocarboxylic acid having six carbon atoms

5. $CH_3 - CH_2 - OH \xrightarrow{KMn}$ X. What is x?
6. At a certain temperature, $Kc = 4.13 \times 10^{-2}$ for the equilibrium, $2IBr(g) \rightleftarrows I_2(g) + Br_2(g)$
    a) What are the concentrations of $I_2$ and $Br_2$ in equilibrium with 0.0124M of IBr?
    b) what was the initial concentration of IBr before equilibrium was established?
7. the following equilibrium constants were determined at 1123k
    $C(s) + CO_2(g) \rightleftarrows 2CO(g)$, $Kc = 1.4 \times 10^{12}$
    $CO(g) + Cl_2(g) \rightleftarrows COCl(g)$, $Kc = 5.5 \times 10^{-1}$

    calculate the equilibrium constant at this temperature for the reaction

    $C(s) + CO(g) + 2Cl_2(g) \rightleftarrows 2COCl_2(g)$

8. For the reaction a(g) + B(s) ⇄ C(g) + D(g), Kc = 49 at $127^0$c. Calculate $K_p$ for this reaction.
9. what is the correct IUPAC name for




10. The common name of

