

Total No. of printed pages = 7

**RETEST EXAMINATION – 2019**

Semester : 4th (Old / New)

Subject Code : Ch-401

**APPLIED CHEMISTRY**

Full Marks – 70

Time – Three hours

The figures in the margin indicate full marks for the questions.

**PART – A**

Marks – 25

*All questions are compulsory.*

1. Fill in the blanks : 1×10=10

(a) In closed system ——— exchanges but not matter with surrounding.

(b) Natural processes are ——— in nature.

(c) Enthalpy of forward and backward reactions are ——— equal.

[Turn over

- (d) Heterogeneous catalyst are also known as \_\_\_\_\_ catalyst.
- (e) Rate law is determined by \_\_\_\_\_.
- (f) Molar conductivity of solution on dilution \_\_\_\_\_.
- (g) Milk is a \_\_\_\_\_ type of emulsion.
- (h) The value of any colligative property of colloids is \_\_\_\_\_.
- (i) Benzene contains \_\_\_\_\_ delocalized pi electrons.
- (j) Secondary alcohols on oxidation give carboxylic acid with \_\_\_\_\_ number of carbon atoms.

2. Write true or false for the following statements :

1×10=10

- (a) Aldehydes and ethers are functional isomers.
- (b) In I.U.P.A.C system, ethers are named as alkoxy alkane.
- (c) On dehydration alcohols give carboxylic. *not*

- (d) Fermentation is a very fast reaction.
- (e) Both entropy and enthalpy are state functions.
- (f) Absorption is a bulk phenomenon.
- (g) Gibbs potential is used to predict the spontaneity of a chemical reaction.
- (h) The size of colloidal particles is smaller than those of true solution.
- (i) pH and POH of distill water is equal.
- (j) Carnot cycle consists of four reversible processes.

3. Choose the correct answer :  $1 \times 5 = 5$

(a) In isobaric process

(i) volume is constant

(ii) pressure constant

(iii) temperature constant

(iv) Both pressure and temperature constant.



(b) The reaction between carboxylic acid and alcohol is known as

- (i) saponification      (ii) hydrolysis  
(iii) esterification      (iv) neutralization

(c) Phenols are

- (i) derivatives of benzene  
(ii) aromatic alcohols  
(iii) aromatic carboxylic acids  
(iv) polyhydric alcohols

(d) In gel, the dispersed and dispersion medium are

- (i) liquid, solid      (ii) solid, liquid  
(iii) liquid, liquid      (iv) gas, liquid

(e) Carbonium ion is formed by

- (i) heterolytic fission  
(ii) homolytic fission  
(iii) pyrolytic fission

(iv) nuclear fission. 100

PART - B

Marks - 45

Answer any five questions.

4. (a) What is entropy ? 2

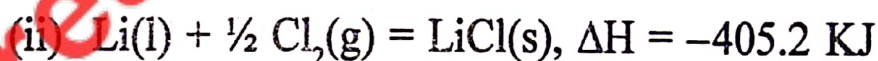
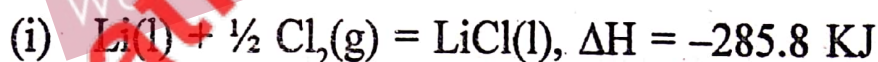
(b) Give the relation between entropy and enthalpy. 3

(c) Show that the efficiency of Carnot engine is always less than one. 4

5. (a) Give a statement of 2nd law of thermodynamics. 2

(b) What is Helmholtz free energy ? Give its significance. 2+2=4

(c) Calculate the enthalpy of fusion of LiCl(s) from the following datas : 3



6. (a) State the characteristics of rate law. 3

(b) Derive the integrated rate law of 1st order reaction. 3

(c) What is the significance of activation energy ? 3



7. (a) What is buffer solution ? Give one example of each of acidic and basic buffer. 1+2=3

(b) Find the pH of .0001M NaOH solution. 3

(c) How is conductometric titration performed ? 3

8. (a) What is dialysis ? 3

(b) Differentiate between Lyophilic and Lyophobic sol. 3

(c) What is chemical adsorption ? 3

9. (a) Give one example of each : 3

(i) Addition reaction

(ii) Elimination reaction

(iii) Polymerization reaction.

(b) Differentiate between Inductive and Mesomeric effect. 3

(c) What are Petrochemicals ? 3

10. (a) How can you convert methanol to ethanol ?

3

(b) Name the products of hydrolysis of ethyl acetate with aqueous solution of strong base.

3

(c) What happens when benzene reacts with chlorine in presence of UV light ?

3

11. (a) How is ethanol manufactured from molasses ?

5

(b) Give the reactions of aldehydes to distinguish from ketones.

4

12. Write short notes on any *three* of the following :

3×3=9

(i) Grignard reagent

(ii) Aromatic hydrocarbon

(iii) Hess's law

(iv) Emulsions.

