



SECTION - D

Answer **any two** questions. **Each** carries a Weightage of **4**.

19. a) Derive an integrated expression for half life time of a first order reaction.
 b) What are the characteristics of catalysts ? Mention two industrially important catalytic reaction and the respective catalysts.
20. a) Write a note on electrical double layer and zeta potential.
 b) Compare lyophilic and lyophobic colloids.
21. a) Discuss the principle of iodometric titration.
 b) Explain the theory of acid-base indicators. **(Weightage 2x4=8)**

SECTION - C



Reg. No. :

Name :

II Semester B.Sc. Degree (CCSS – Supple./Improv.)
Examination, May 2015
(2013 and Earlier Admn.)
COMPLEMENTARY COURSE IN CHEMISTRY
2C02 CHE : Chemistry (For Physical and Biological Sciences)

Time : 3 Hours

Max. Weightage : 25

SECTION - A

Answer **all** the questions. **Each** question has a Weightage of **1**. Choose the correct answer.

1. i) The number of molecules involved in the step leading to the chemical reaction is
 a) order
 b) molecularity
 c) half life time
 d) pseudo order
- ii) The unit of rate constant zero order reaction is
 a) $\text{mol dm}^{-3} \text{s}^{-1}$ b) s^{-1} c) $\text{dm}^3 \text{mol}^{-1} \text{s}^{-1}$ d) $\text{dm}^6 \text{mol}^{-2} \text{s}^{-1}$
- iii) In homogeneous catalysis
 a) Catalyst is in different physical phase from the reactants
 b) Catalyst and the reactants are present in the same phase
 c) Products only present in the same phase
 d) Reactant is in different physical phase from the product
- iv) The rate constant of first order reaction is $5 \times 10^{-2} \text{ min}^{-1}$. Its $t_{1/2}$ is
 a) 20.14 min b) 13.87 min c) 16 min d) 11.9 min
2. i) Ratio of rate constant of forward reaction to rate constant of backward reaction is
 a) equilibrium constant b) rate law
 c) Chemical equilibrium d) reversible reaction
- ii) K_p and K_x are related as
 a) $K_p = K_x / P^{\Delta n}$ b) $K_p = K_x / (RT)^{\Delta n}$
 c) $K_p = K_x P^{\Delta n}$ d) $K_p = K_x (RT)^{\Delta n}$



- iii) A substance absorbs radiation of high frequency and emits light even after the incident radiation is cut off is
- a) Phosphorescence b) Chemiluminescence
c) Photosensitization d) Fluorescence
- iv) The energy per mole of light having wavelengths of 85 nm
- a) $1.5 \times 10^6 \text{ Jmol}^{-1}$ b) $1.4 \times 10^6 \text{ Jmol}^{-1}$
c) $1.5 \times 10^8 \text{ Jmol}^{-1}$ d) $1.4 \times 10^8 \text{ Jmol}^{-1}$
3. i) The zig-zag movement of colloidal particles in the dispersion medium is
- a) Brownian movement b) Ultrafiltration
c) Tyndall effect d) Dialysis
- ii) A jelly like colloidal system in which a liquid is dispersed in a solid medium is
- a) aerosol b) foam c) gel d) emulsion
- iii) The sols of metal sulphides are
- a) negatively charged b) positively charged
c) neutral d) positive or negative
- iv) Which among the following is a lyophobic colloid ?
- a) Glue b) Gelatin
c) Starch d) Gold sol
4. i) An indicator that can be used in weak acid strong base titration is
- a) phenolphthalein b) methyl orange
c) methyl red d) bromothymol blue
- ii) In KMnO_4 v/s oxalic acid titration, oxalic acid is oxidised to water and
- a) CO b) CO_2 c) CH_3COOH d) CH_3CHO
- iii) Which one of the following is not a primary standard substance ?
- a) $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ b) $\text{H}_2\text{C}_2\text{O}_4 \cdot 2\text{H}_2\text{O}$
c) Na_2CO_3 d) $\text{K}_2\text{Cr}_2\text{O}_7$
- iv) The difference between the measured value and the true value is
- a) relative error b) absolute error
c) accuracy d) Precision **(Weightage 4x1=4)**



SECTION – B

Answer **any five** questions. **Each** carries a Weightage of **1**.

- Distinguish between order and molecularity of a reaction.
- Explain pseudo first order reactions. Give one example.
- Why chemical equilibrium is referred to as dynamic equilibrium ?
- Give the relation between K_p and K_c and explain the terms.
- State Einstein's law of photochemical equivalence.
- Define quantum yield.
- Explain syneresis.
- Write the principle of chromatography. **(Weightage 5x1=5)**

SECTION – C

Answer **any four** questions. **Each** carries a Weightage of **2**.

- In a first order reaction, the reaction requires 40.5 minutes for 25% decomposition. Calculate the rate constant for the reaction.
- How does Le Chatelier's principle explain the effect of pressure on the formation of NH_3 ?
- Write the characteristics of equilibrium constant.
- Write a note on Chemiluminescence.
- Give an account of the stability of colloids.
- What are primary standards ? What are the qualities which a primary standard must have ? **(Weightage 4x2=8)**