

INTERNAL EXAMINATION

B. Sc. (Third Semester Examination)

Saturday, 06<sup>th</sup> October 2018

US03EICH01 – Traditional Methods of Analysis

3.00 p.m. to 4.00 p.m.

Total Marks : 50

Q.1. Choose the correct option for the following :

[08]

- i. A dilute solution of sodium carbonate is added to two test tubes one containing dil HCl(A) and the other containing dil NaOH(B). The correct observation was
  - (a) A brown gas liberated in test tube A
  - (b) A brown gas liberated in test tube B
  - (c) A colorless gas liberated in test tube A
  - (d) A colorless gas liberated in test tube B
- ii. Which solution is used to maintain constant pH, if a small amount of acid or base is added to it?
  - (a) Lewis acid
  - (b) Lewis base
  - (c) buffer
  - (d) none of these
- iii. Ammine, Carbonyl and Nitrosyl are-----
  - (a) complexing agent
  - (b) Reducing agent
  - (c) Oxidizing agent
  - (d) all of these
- iv. A chelating agent can be....
  - (a) monodentate
  - (b) Polydentate
  - (c) none of these
  - (d) all of these
- v. Which of the following indicator is added in the titration of  $\text{KMnO}_4$  with  $\text{FeSO}_4$ 
  - (a) Eosin
  - (b) Mureoxide
  - (c) Starch
  - (d) None of these
- vi. Which of the following is a redox titration?
  - (a) titration of HCl with NaOH
  - (b) titration of  $\text{CH}_3\text{COOH}$  with NaOH
  - (c) titration of succinic acid with  $\text{KMnO}_4$
  - (d) all of these
- vii. The temporary hardness of water due to calcium bicarbonate can be removed by
  - (a) adding caustic potash
  - (b) boiling
  - (c) filtration
  - (d) adding caustic soda
- viii. Indicator used to determine sulphate in hard water by EDTA titration is
  - (a) phenolphthalein
  - (b) diphenyl amine
  - (c) Eriochrome black T
  - (d) Eosin



- Q.2. Answer any five:** [10]
- Define: Titrand and titration error.
  - Write the conditions fulfilled by common titrimetric methods of analysis.
  - Define with example: Chelating agent & Demasking agent
  - Discuss back titration used for EDTA titration.
  - Define: Reducing agent & Voltage
  - Sulphuric acid is used for potassium permanganate titration in place of hydrochloric acid.
  - Distinguish clearly between temporary hard water and permanent hard water.
  - Explain the method to determine turbidity of water.
- Q.3.** Discuss the types of reactions involved in titrimetric analysis with suitable examples. [08]
- OR
- Q.3.** Show that at the color change interval, pH of the system is  $\text{pH} = \text{pK}_{\text{in}} + 1$ . Also discuss the titration curve for strong acid against strong base. [08]
- Q.4.** Define complex salt. Explain stability constant and formation of complex ion by taking proper illustration. [08]
- OR
- Q.4.** What are the requirements for metal ion indicator for use in visual detection of end point? Also list out the points which should be kept in mind during complexometric titration. [08]
- Q.5.** Explain titration curve for iron (II) & cerium (IV) in detail plotting proper graph. [08]
- OR
- Q.5.** Write in detail on internal redox indicators, explaining working of Diphenyl amine indicator. [08]
- Q6** What are the sources of water pollution? Give details about industrial wastes as source of pollution. [08]
- OR
- Q6** Discuss the methods to analyze the presence of alkalinity, fluoride, chloride, sulphate and conductivity in water sample. [08]



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