[10] SEAT No._____

No. of printed pages : 02

SARDAR PATEL UNIVERSITY

B. Sc. (Third Semester Examination)

Saturday, 01st December, 2018

2.00 p.m. to 4.00 p.m.

US03EICH01 – Traditional Methods of Analysis

Total Marks : 70

Instructions : (i) All questions are to be attempted in your answer book.
(ii) Figures to the right indicate marks.

Q.1. Choose the correct option for the following : [10]

i. The substance added during acid base titration for the detection of end point by color change is...
(a)Strong base
(b) indicator
(c)Strong acid
(d) buffer

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. Mixture of ammonium chloride & ammonium hydroxide is----------.
(a) complexing agent
(b) indicator
(c) basic buffer
(d)acidic buffer

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 $KMnO_4$ with $FeSO_4$
(a) Eosin
(b) Mureoxide
(c) Starch
(d) Eriochrome black- T

vi. Which of the following is a redox titration?
(a) titration of HCl with NaOH
(b) titration of CH_3COOH with NaOH
(c) titration of succinic acid with $KMnO_4$
(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

CPTC

viii Indicator used to determine sulphate in hard water by EDTA titration is
(a)phenolphthalein
(b) diphenyl amine
(c) Eriochrome black T
(d)Eosin

ix Molality is
(a)number of moles solute dissolved per liter of solution
(b)number of moles of solute dissolved per liter of solvent
(c)number of moles of solute dissolved per 1000g of solvent
(d) number of moles of solute dissolved per 1000g of solution.

x Oxidation involves
(a)gain of electrons
(b)addition of hydrogen
(c)decrease in oxidation number
(d)loss of electrons

Q.2. Answer any ten: **[20]**

i. Define: Titrand and Primary standard solution.
ii. What are universal indicators? Give example.
iii. Define with example: Chelating agent & Demasking agent
iv. Discuss direct titration used for EDTA titration.
v. Define: Reducing agent & Voltage
vi. Sulphuric acid is used for potassium permanganate titration in place of hydrochloric acid.
vii Distinguish clearly between temporary hard water and permanent hard water.
viii Explain the method to determine turbidity of water.
ix Give method and calculation to determine acidity in water.
x Write the conditions fulfilled by common titrimetric methods of analysis.
xi List out the points which should be kept in mind during complexometric titration.
xii Give Nernst equation at any temperature T and at 25^0 C, explaining each term .

Q.3. Discuss the types of reactions involved in titrimetric analysis with suitable examples. **[10]**

OR

Q.3. Show that at the color change interval, pH of the system is $pH = pK_{In} +\_1$. Also discuss the method to determine percentage purity of washing soda. **[10]**

Q.4. Discuss on titration mixture with respect to selectivity, masking and demasking agents. **[10]**

OR

Q.4. What are the requirements for metal ion indicator for use in visual detection of end point? Also explain working of metal ion indicator for EDTA titration. **[10]**

Q.5. Explain titration curve for iron (II) & cerium (IV) in detail plotting proper graph. **[10]**

OR

Q.5. Write in detail on internal redox indicators, explaining working of Diphenyl amine indicator. **[10]**

Q6 What are the sources of water pollution? Give details about industrial wastes as source of pollution. **[10]**

OR

Q6 Discuss the methods to analyze the presence of alkalinity, fluoride, chloride, sulphate and conductivity in water sample. **[10]**

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