

# VITAHILYA VISHWAVIDYALAYA, INDORE

## 1. Sc. CHEMISTRY PRACTICALS (SEMESTER – III)

**Examination shall be conducted separately for each branch : (Duration : 6-8 hrs in a branch).**

### **Inorganic Chemistry**

Quantitative determination of a three component mixture	12
Chromatographic separations	12
Record	04
Viva-Voce	<u>05</u>
Total :	33

#### **Quantitative determination of a three component mixture :**

One Volumetrically & two gravimetrically

- a. Cu<sup>2+</sup>, Ni<sup>2+</sup>, Zn<sup>2+</sup>
- b. Ag<sup>+</sup>, Ni<sup>2+</sup>, Mg<sup>2+</sup>

#### **Chromatographic separations & determination of R<sub>f</sub> values :**

(Thin layer / Paper / Column chromatography)

- (i) Group II metal ions.
- (ii) Indicators.
- (iii) Cu<sup>2+</sup>, Fe<sup>2+</sup>, Ni<sup>2+</sup> & Co<sup>2+</sup>.
- (iv) Ink pigment.

### **Organic Chemistry**

Multi - Step Synthesis of Organic compounds	12
Quantitative Estimations	12
Record	04
Viva-Voce	<u>05</u>
Total :	33

#### **Multi – Step Synthesis of Organic compounds :**

Exercise should illustrate the use of organic reagents & may involve purification of the products by chromatographic techniques :

Aniline → p – Nitroaniline; Aniline → p – Bromoaniline; Phthalic acid → Anthranilic acid; Pinacol –Pinacolone rearrangement (Benzophenone → Benzopinacol → Benzopincolone); Bezoins Benzilic acid (Bezoins → Benzil → Benzilic acid); Benzidine rearrangement (Hydrazobenzene → Benzidine).

#### **Quantitative Estimations (Titrimetric method) :**

- (1) Estimation of glucose, glycine & ascorbic acid from Vitamin – C tablet.
- (2) Determination of DO, COD & BOD of water sample.

Q. No. 1  
 Date: 2-9-16  
 Name: Q. sharma  
 Date: 2-9-2016  
 H.P.S.  
 Date: 2-9-2016  
 A.P.O.J.  
 Date: 2-9-2016  
  
 D.K.S.  
 Date: 2-9-16  
 Name: A.M.J.  
 Date: 2-9-16  
  
 S.R.  
 Date: 2-9-16  
 Name: A.P.J.  
 Date: 2-9-16

## Physical Chemistry

Any one Experiment / Exercise from Section – A	12
Any one Experiment / Exercise from Section – B	13
Record	04
Viva Voce	<u>05</u>
Total :	34

### Section – A

#### Spectroscopy

1. (a) Interpretation of IR, NMR spectra.  
(b) Numerical problems on UV, IR & NMR.

#### 2. Spectrophotometry / Colorimetry

- (a) Determination of the composition of a mixture of  $K_2Cr_2O_7$  &  $KMnO_4$  by the application of mixture law.
- (b) Determination of Phosphate concentration in a soft drink.
- (c) Titration of Mohr's salt with  $K_2Cr_2O_7$  /  $KMnO_4$  solution.
- (d) Determination of order & energy of activation for the decomposition of violet colour complex formed between ceric ions & N – Phenyl anthranilic acid.

#### Chemical Kinetics

1. Determination of kinetics of decomposition of complex formed between sodium sulphide & sodium nitroprusside spectrophotometrically.
2. Investigate the reaction between acetone & iodine.

### Section – B

#### Electronics :

1. Study of the charge & discharge of a capacitor through a resistor.
2. Verification of Kirchoff's current law (KCL) & Kirchoff's voltage law (KVL).

#### Conductometry :

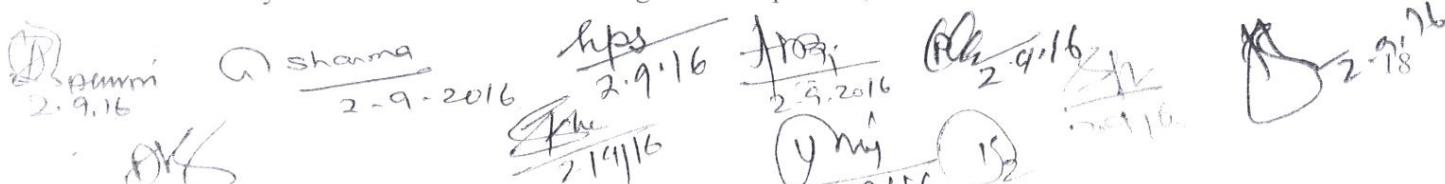
1. Determination of equivalent conductance of a weak electrolyte at different concentrations, and hence the dissociation constant of the electrolyte. Also verify Ostwald's dilution law.
2. Determination of equivalent conductance of a weak electrolyte at infinite dilution using Kohlrausch law.

#### pH metry:

1. Determination of Acidic and Basic dissociation constant of an amino acid and Isoelectric point of the acid.
2. Measurement of the pH of Buffer Solution ( $CH_3COOH + CH_3COONa$ ) using Henderson's equation and hence  $pK_a$ .

#### Books Suggested:

1. Inorganic Experiments, J. Derek Woolings, VCH.
2. Microscale Inorganic Chemistry, Z. Szafran, R.M. Pike and M.M. Singh, Wiley.
3. Practical Inorganic Chemistry, G. Marr and B. W. Rockett, Van Nostrand.
4. The systematic Identification of Organic Compounds, R.L. Shriner and D.Y. Curlin.


 A series of handwritten signatures and dates are visible in the bottom right corner. The signatures include "R. Puri 2.9.16", "Sharma 2.9.2016", "LPS 2.9.16", "APRI 2.9.2016", "R. K. 2.9.16", "Y. M. 2.9.16", and "D. K. 2.9.16". There are also some illegible signatures and a date "2.9.16" near the bottom left.