PRACTICAL FOR CLASSES XI AND XII

SUBJECT : CHEMISTRY (CHEM)

CLASS – XI

COURSE CODE : PRACTICAL

FULL MARKS : 30

Evaluation Scheme for Examination	**Marks**
Volumetric analysis	10
Environment-related experiments	08
Characterization and purification of chemical substances	06
Class Record, Project and Viva	06
Total	**30**

Practical Syllabus

A. Basic Laboratory Techniques

i. Cutting glass tube and glass rod
ii. Bending a glass tube
iii. Drawing out a glass jet
iv. Boring a cork

B. Characterization and purification of chemical substances

i. Determination of the melting point of an organic compound
ii. Determination of the boiling point of an organic compound
iii. Crystallization of impure sample of any of the following: Alum, Copper, Sulphate, Benzoic acid.

C. Environment-related experiments

i. Calculation of pH of soil sample.
ii. Determination of turbidity for a given sample of water
iii. Determination of dissolved oxygen in a given sample of water
iv. Determination of TDS of water sample

D. Quantitative estimation (Use of digital balance (precession up to 3 decimal points)**) (Volumetric analysis)**

i. Determination of strength of a given sodium hydroxide solution by titrating it against a standard oxalic acid solution.
ii. Determination of strength of a given hydrochloric acid solution by titrating it against standard sodium carbonate solution.
iii. Standardisation of $KMnO_4$ solution by using standard Oxalic acid solution.
iv. Estimation of Fe in Mohr's salt solution using standard $KMnO_4$ solution or standard $K_2Cr_2O_7$ solution.

Project Work

a) Preparation of standard solutions:

i) Preparation of (N/10) Oxalic acid solution.
ii) Preparation of (N/10) Mohr's salt solution.
iii) Preparation of (N/10) Sodium carbonate solution.
iv) Preparation of (N/10) Hydrochloric acid solution.
v) Preparation of (N/10) Sodium hydroxide solution.

b) Preparation of inorganic compounds:

i) Preparation of potash alum.

ii) Preparation of potassium ferric oxalate.

c) Study of acidity of-

i) Different samples of tea leaves.

ii) Fruit and vegetable juices.

CLASS – XII

COURSE CODE : PRACTICAL

FULL MARKS : 30

Evaluation Scheme for Examination	MARKS
Potentiometric Analysis	06
Salt Analysis	08
Detection of functional groups in Organic compounds	04
Content-Based Experiment (Chemical Kinetics/Thermochemistry/ Preparation of Organic Compounds)	06
Class record, Viva and Project work	06
Total	**30**

Practical Syllabus

A. Chemical kinetics

(i) Study of the rate of reaction of iodide ions with hydrogen peroxide at room temperature using different concentrations of iodide ions. (with Excel plot)

(ii) Study of the reaction rate of hydrolysis of ester in an acidic medium (with Excel plot)

B. Thermochemistry :

Any one of the following experiments :

(i) Enthalpy of dissolution of copper sulphate or potassium nitrate.

(ii) Enthalpy of neutralization of strong acid (HCl) and strong base (NaOH)

(iii) Determination of enthalpy change during interaction (hydrogen bond formation) between acetone and chloroform.

C. Electrochemistry

(i) Potentiometric titration of Fe^{3+}/Fe^{2+} system with Potassium dichromate and Potassium permanganate solutions.

(ii) Potentiometric determination of concentration of $AgNO_3$ solution (N/100 or N/200) using standard KCl solution (N/10).

D. Tests for the functional groups present in organic compounds:

Unsaturation, alcoholic -OH (1°), phenolic -OH, aldehyde, ketone, carboxylic acid and primary aromatic amine groups.

E. Preparation of Organic compounds:

Preparation of any two of the following compounds :

(i) Benzilic acid (From Benzil)

(ii) Aniline yellow or 2-Naphthol aniline dye.

(iii) Iodoform.

F. Characteristic test of carbohydrates, fats and proteins in pure samples and their detection in given foodstuffs.

G. Qualitative analysis

Determination of one cation and anion in a given salt.

Cations - $Pb^{2+}, Cu^{2+}, Al^{3+}, Fe^{3+}, Cr^{3+}, Mn^{2+}, Ni^{2+}, Zn^{2+}, Co^{2+}, Ca^{2+}, Sr^{2+}, Ba^{2+}, Mg^{2+}, NH_4^+$

Anions – $CO_3^{2-}, S^{2-}, SO_4^{2-}, S_2O_3^{2-}, NO_2^-, NO_3^-, , Cl^-, Br^-, I^-, PO_4^{3-}$

(Note: Insoluble salts excluded)

Project work – where feasible may include

(i) Model preparation

(ii) Investigatory project

(iii) Science exhibits

(iv) Participation in science fairs

(v) Testing purity of food articles like butter, pulse, milk etc.