

# CBSE 12<sup>th</sup> PRACTICAL SYLLABUS 2026 (Chemistry)



Evaluation Scheme for Examination	Marks
Volumetric Analysis	08
Salt Analysis	08
Content Based Experiment	06
Project Work	04
Class record and viva	04
<b>Total</b>	<b>30</b>

## PRACTICAL SYLLABUS

Micro-chemical methods are available for several of the practical experiments, wherever possible such techniques should be used.

### A. Surface Chemistry

1. Preparation of one lyophilic and one lyophobic sol

Lyophilic sol - starch, egg albumin and gum

Lyophobic sol – aluminum hydroxide, ferric hydroxide, arsenous sulphide.

2. Dialysis of sol-prepared in (a) above.
3. Study of the role of emulsifying agents in stabilizing the emulsion of different oils.

## **B. Chemical Kinetics**

1. Effect of concentration and temperature on the rate of reaction between Sodium Thiosulphate and Hydrochloric acid.
2. Study of reaction rates of any one of the following:
  - Reaction of Iodide ion with Hydrogen Peroxide at room temperature using different concentration of Iodide ions.
  - Reaction between Potassium Iodate, ( $\text{KIO}_3$ ) and Sodium Sulphate: ( $\text{Na}_2\text{SO}_3$ ) using starch solution as indicator (clock reaction).

## **C. Thermochemistry**

Any one of the following experiments

- Enthalpy of dissolution of Copper Sulphate or Potassium Nitrate.
- Enthalpy of neutralization of strong acid (HCl) and strong base (NaOH).
- Determination of enthalpy change during interaction (Hydrogen bond formation) between Acetone and Chloroform.

## **D. Electrochemistry**

Variation of cell potential in  $\text{Zn}/\text{Zn}^{2+}||\text{Cu}^{2+}/\text{Cu}$  with change in concentration of electrolytes ( $\text{CuSO}_4$  or  $\text{ZnSO}_4$ ) at room temperature.

## **E. Chromatography**

1. Separation of pigments from extracts of leaves and flowers by paper chromatography and determination of  $R_f$  values.
2. Separation of constituents present in an inorganic mixture containing two cations only (constituents having large difference in  $R_f$  values to be provided).

## **F. Preparation of Inorganic Compounds**

1. Preparation of double salt of Ferrous Ammonium Sulphate or Potash Alum.
2. Preparation of Potassium Ferric Oxalate.

## **G. Preparation of Organic Compounds**

Preparation of any one of the following compounds

1. Acetanilide

2. Di-benzalAcetone
3. p-Nitroacetanilide
4. Aniline yellow or 2 - Naphthol Aniline dye.

#### H. Tests for the functional groups present in organic compounds

Unsaturation, alcoholic, phenolic, aldehydic, ketonic, carboxylic and amino (Primary) groups.

#### I. Characteristic tests of carbohydrates, fats and proteins in pure samples and their detection in given foodstuffs.

#### J. Determination of concentration/ molarity of $\text{KMnO}_4$ solution by titrating it against a standard solution of:

1. Oxalic acid,
  2. Ferrous Ammonium Sulphate
- (Students will be required to prepare standard solutions by weighing themselves).

#### K. Qualitative analysis

Determination of one anion and one cation in a given salt

**Cations:**  $\text{Pb}^{2+}$ ,  $\text{Cu}^{2+}$ ,  $\text{Al}^{3+}$ ,  $\text{Fe}^{3+}$ ,  $\text{Mn}^{2+}$ ,  $\text{Ni}^{2+}$ ,  $\text{Zn}^{2+}$ ,  $\text{Co}^{2+}$ ,  $\text{Ca}^{2+}$ ,  $\text{Sr}^{2+}$ ,  $\text{Ba}^{2+}$ ,  $\text{Mg}^{2+}$ ,  $\text{NH}_4^+$

**Anions:**  $\text{CO}_3^{2-}$ ,  $\text{S}^{2-}$ ,  $\text{SO}_3^{2-}$ ,  $\text{NO}_3^-$ ,  $\text{NO}_2^-$ ,  $\text{Cl}^-$ ,  $\text{Br}^-$ ,  $\text{I}^-$ ,  $\text{SO}_4^{2-}$ ,  $\text{PO}_4^{3-}$ ,  $\text{CH}_3\text{COO}^-$ ,  $\text{C}_2\text{O}_4^{2-}$

(Note: Insoluble salts excluded)

#### PROJECTS

Scientific investigations involving laboratory testing and collecting information from other sources.

##### A few suggested Projects

- a) Study of the presence of oxalate ions in guava fruit at different stages of ripening.
- b) Study of quantity of casein present in different samples of milk.
- c) Preparation of soybean milk and its comparison with the natural milk with respect to curd formation, effect of temperature, etc.
- d) Study of the effect of Potassium Bisulphate as food preservative under various conditions (temperature, concentration, time, etc.)
- e) Study of digestion of starch by salivary amylase and effect of pH and temperature on it.

- f) Comparative study of the rate of fermentation of following materials: wheat flour, gram flour, potato juice, carrot juice, etc.
- g) Extraction of essential oils present in Saunf (aniseed), Ajwain (carom), Illaichi (cardamom).
- h) Study of common food adulterants in fat, oil, butter, sugar, turmeric power, chili powder and pepper.

**Note:** Any other investigatory project, which involves about 10 periods of work, can be chosen with the approval of the teacher.

### Practical Examination for Visually Challenged Learners Classes XI and XII

Evaluation Scheme	Marks
Identification/Familiarity with the apparatus	5
Written test (based on given/prescribed practical's)	10
Practical Record	5
Viva	10
<b>Total</b>	<b>30</b>

### General Guidelines

- The practical examination will be of two-hour duration.
- A separate list of ten experiments is included here.
- The written examination in practicals for these students will be conducted at the time of practical examination of all other students.
- The written test will be of 30 minutes' duration.
- The question paper given to the students should be legibly typed. It should contain a total of 15 practical skill based very short answer type questions. A student would be required to answer any 10 questions.
- A writer may be allowed to such students as per CBSE examination rules.
- All questions included in the question papers should be related to the listed practicals
- Every question should require about two minutes to be answered.
- These students are also required to maintain a practical file. A student is expected to record at least five of the listed experiments as per the specific instructions for each subject. These practicals should be duly checked and signed by the internal examiner.
- The format of writing any experiment in the practical file should include aim, apparatus required, simple theory, procedure, related practical skills, precautions etc.
- Questions may be generated jointly by the external/internal examiners and used

for assessment.

- The viva questions may include questions based on basic theory/principle/concept, apparatus/materials/ chemicals required, procedure, precautions, sources of error etc.

### **List of apparatus for identification/familiarity for assessment in practical (All experiments)**

Beaker, glass rod, tripod stand, wire gauze, Bunsen burner, Whatman filter paper, gas jar, capillary tube, pestle and mortar, test tubes, tongs, test tube holder, test tube stand, burette, pipette, conical flask, standard flask, clamp stand, funnel, filter paper

### **Hands-on Assessment**

- Identification/familiarity with the apparatus
- Odour detection in qualitative analysis

### **List of Experiments**

The experiments have been divided into two sections: Section A and Section B. The experiments mentioned in Section B are mandatory.

## **SECTION A**

### **A. Surface Chemistry**

1. Preparation of one lyophilic and one lyophobic sol
  - i. Lyophilic sol - starch, egg albumin and gum
  - ii. Lyophobic sol – Ferric hydroxide

### **B. Chromatography**

Separation of pigments from extracts of leaves and flowers by paper chromatography and determination of  $R_f$  values (distance values may be provided).

### **C. Tests for the functional groups present in organic compounds**

1. Alcoholic and Carboxylic groups
2. Aldehyde and Ketonic groups

### **D. Characteristic tests of carbohydrates and proteins in the given foodstuffs.**

### **E. Preparation of Inorganic Compounds- Potash Alum**

## SECTION B (Mandatory)

### F. Quantitative analysis

1. (a) Preparation of a given volume of the standard solution of Oxalic acid.  
(b) Determination of molarity of  $\text{KMnO}_4$  solution by titrating it against a standard solution of Oxalic acid.
2. The above exercise [F 1 (a) and (b)] to be conducted using Ferrous ammonium sulphate (Mohr's salt)

### G. Qualitative Analysis

Determination of one anion and one cation in a given salt

**Cation -  $\text{NH}_4^+$**

**Anions:  $\text{CO}_3^{2-}$ ,  $\text{S}^{2-}$ ,  $\text{SO}_3^{2-}$ , ,  $\text{Cl}^-$ ,  $\text{CH}_3\text{COO}^-$**

**(Note: insoluble salts excluded)**

**Note:** The above practical may be carried out in an experiential manner rather than recording observations.

### Prescribed Books:

1. Chemistry Part – I, Class-XII, Published by NCERT.
2. Chemistry Part – II, Class-XII, Published by NCERT.
3. Manual of Microscale Chemistry laboratory kit.

### Links for NCERT textbooks:

1. <https://ncert.nic.in/textbook.php?lech1=0-5>
2. <https://ncert.nic.in/textbook.php?lech2=0-5>
3. [https://ncert.nic.in/division/dek/pdf/Manual\\_01.pdf](https://ncert.nic.in/division/dek/pdf/Manual_01.pdf)

## QUESTION PAPER DESIGN CLASSES XI & XII

S.No	Domains	Total Marks	%
1	<b>Remembering and Understanding:</b> Exhibit memory of previously learned material by recalling facts, terms, basic concepts and answers. Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions and stating main ideas.	28	40
2	<b>Applying:</b> Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	21	30
3	<b>Analysing, Evaluating and Creating:</b> Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations. Present and defend opinions by making judgments about information, validity of ideas or quality of work based on a set of criteria. Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions.	21	30

1. No chapter wise weightage is provided, however, care to be taken to cover all the chapters.
2. Suitable internal variations may be made for generating various templates.
3. There will be no overall choice in the question paper.
4. However, 33% internal choices will be given in all the sections.