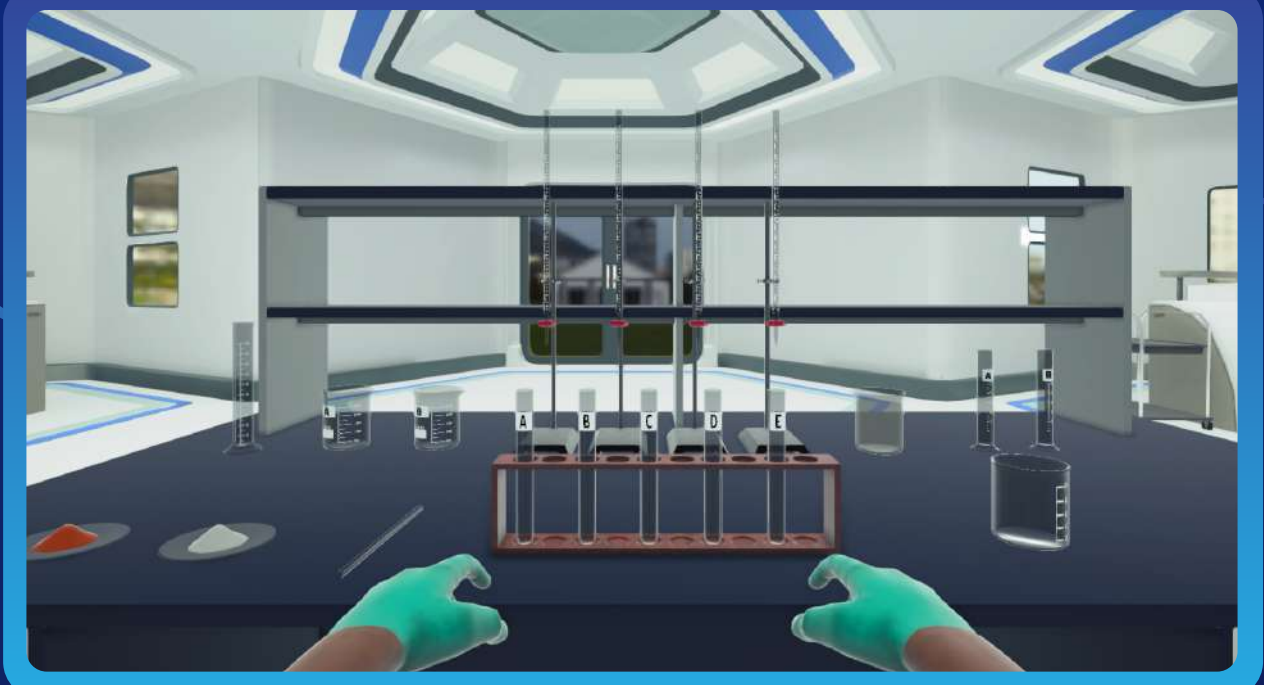
SIMULAB™

True to Life Lab Experience

List of Experiments

Chemistry

Activities are also included



Class 9th

CBSE Board

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True to Life Lab Experience

Experiments

1. To show that gases are readily compressible and liquids are not
2. To study the changes in the state of sublimate solids on heating
3. To study the process of evaporation
4. To determine the boiling point of water and melting point of ice
5. To prepare a saturated solution of common salt in distilled water
6. To prepare a solution of common salt of 10% composition by mass
7. To separate the components of a mixture of sand, common salt and ammonium chloride
8. To prepare solutions of various substances and to identify them as true solutions and suspensions
9. To prepare a colloidal solution of sulphur
10. To study the process of separation of a mixture of two immiscible liquids
11. To separate a mixture of two miscible liquids by simple distillation
12. To differentiate between a mixture (containing two components) and a pure compound
13. To verify the law of conservation of mass in a chemical reaction

Class 9th

CBSE Board

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Activities

1. Observation of mixing of water with salt/sugar
2. How small are these particles of matter?
3. Particles of matter are continuously moving
4. Particles of matter attract each other
5. Effect of change of temperature on different states of matter
6. Experiment on sublimation
7. Factors affecting evaporation
8. Types of mixture
9. Concentration of a solution
10. Tyndall effect
11. Difference between mixture and compound
12. Experiment on the law of conservation of mass
13. Experiment on static electricity

Class 9th
Odisha Board

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Experiments

1. Observation of mixing of water with sugar/salt
2. Concentration of a solution
3. Crystallization
4. Experiment on sublimation
5. Types of mixture
6. How small are these particles of matter?
7. Effect of change of temperature on different states of matter
8. Factors affecting evaporation
9. Particles of matter move continuously in their state
10. Particles of matter attract each other
11. Tyndall effect
12. Obtaining coloured component (dye) from black ink by evaporation
13. Separation of a mixture of two immiscible liquids
14. Separation of dye in black ink using chromatography
15. Separation of a mixture of two miscible liquids by distillation & fractional distillation
16. Difference between mixture and compound
17. Experiment on the law of conservation of mass using weighing machines
18. Experiment of static electricity

Class 10th

CBSE Board

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Experiments

1. To study the chemical reaction of an iron nail with aqueous copper sulphate solution and to study the burning of magnesium ribbon in air
2. To study the following chemical reactions: (a) zinc with sulphuric acid; (b) precipitation reaction between aqueous solution of barium chloride and aqueous solution of sodium sulphate; and (c) thermal decomposition of ammonium chloride in an open container
3. To measure the change in temperature during chemical reactions and to conclude whether the reaction is exothermic or endothermic
4. To study the reactions of hydrochloric acid with zinc metal, sodium carbonate, and sodium hydroxide
5. To study the reactions of sodium hydroxide with aluminium metal and hydrochloric acid
6. To show that acids, bases, and salts are electrolytes
7. To find the pH of the given samples of solutions of solids or fruit juices using pH paper
8. To identify bleaching powder among given samples of chemicals
9. To identify washing soda or baking soda among given samples of chemicals
10. To show that crystals of copper sulphate contain water of crystallisation
11. To study the interaction of metals such as magnesium, zinc, iron, tin, lead, copper, and aluminium (any four) with their salt solutions and to arrange them according to their reactivity
12. To study the reaction of metals with water under different temperature conditions
13. To study the reaction of metals with dilute acids

Class 10th
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Experiments

14. To prepare sulphur dioxide gas and study its physical and chemical properties
15. To prepare carbon dioxide gas and study its physical and chemical properties
16. To study the process of electrolysis
17. To study the physical and chemical properties of acetic acid (ethanoic acid)
18. To study the esterification reaction between alcohol and carboxylic acid
19. To study some oxidation reactions of alcohol
20. To study saponification reaction for preparation of soap
21. To compare the foaming capacity of different samples of soap
22. To study the comparative cleansing capacity of a sample of soap in soft and hard water

Class 10th

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Activities

1. Features of chemical reaction
2. Combination reaction
3. Decomposition reaction
4. Displacement reaction
5. Double displacement reaction
6. Oxidation and reduction
7. Testing various acids and bases with different reagents
8. How do acids & bases react with metals?
9. How do acids & bases react with each other?
10. Reaction of metallic oxides with acids
11. What happens to an acid or a base in a water solution?
12. Determination of pH of different solutions
13. What is the pH of soil?
14. pH of salts
15. Are the crystals of salts really dry?
16. How to convert plaster of paris to gypsum?
17. Physical properties of metals
18. Physical properties of non metals
19. Chemical properties of metals
20. Properties of ionic compounds
21. Corrosion of iron
22. Combustion

Class 10th

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Experiments

1. Combination reaction
2. Displacement reaction
3. Double displacement reaction
4. Oxidation and reduction
5. How do acids & bases react with each other?
6. Determination of pH with different solutions
7. Are the crystals of salts really dry?
8. Features of chemical reaction
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16. What is the pH of soil?

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Experiments

17. pH of salts
18. How to convert plaster of Paris to gypsum?
19. Chemical properties of metals
20. Properties of ionic compounds
21. Corrosion of iron
22. Combustion of Organic compounds
23. Model/chart of Mendeleev's periodic table & modern periodic table

Class 11th

CBSE Board

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True to Life Lab Experience

Experiments

1. Introduction to apparatus used in chemistry laboratory.
2. Basic Laboratory Techniques.
3. Purification and Criteria of Purity
    a. Purification of a sample of any one of the following Potash alum, Copper sulphate or Benzoic acid by crystallisation.
    b. Determination of the melting point of a solid organic compound.
    c. Determination of the boiling point of a liquid organic compound.
4. Chemical Equilibrium (Ionic Equilibrium in Solution)
    a. Study of the shift in equilibrium in the reaction of ferric ions and thiocyanate ions by increasing the concentration of any one of these ions.
    b. Study of the shift in equilibrium in the reaction between $[Co(H_2O)6]^{2+}$ and Cl^- ions, by changing the concentration of any one of these ions.
5. pH and pH Changes in Aqueous Solutions
    a. To determine the pH of some fruit juices.
    b. To observe the variation in pH of acid/base with dilution.
    c. To study the variation in pH by common ion effect in the case of weak acids and weak bases.
    d. To study the change in pH during the titration of a strong acid with a strong base by universal indicator.
    e. To study the pH of solutions of sodium chloride, ferric chloride, and sodium carbonate.

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Experiments

6. Titrimetric Analysis
    a. Titration of sodium hydroxide against the standard oxalic acid solution.
    b. Titration of hydrochloric acid against standard sodium carbonate solution.
7. Systematic Qualitative Analysis of Cations Part-1 To detect one cation Cations: Pb^{2+}, Cu^{2+}, As^{3+}, Al^{3+} , Mn^{2+}, Zn^{2+}
8. Systematic Qualitative Analysis of Cations Part-2 To detect one cation Cations: Ca^{2+}, Sr^{2+}, Ba^{2+} , Mg^{2+} , NH_4^+
9. Systematic Qualitative Analysis of anions Part-1 in the given salt from the following ions: CO_3^{2-} , S^{2-} , SO_3^{2-} , SO_4^{2-}, Br^-
10. Systematic Qualitative Analysis of anions Part-2 in the given salt from the following ions: I^-, PO_4^{3-}, $C_2O_4^{2-}$, CH_3COO^-.
11. Systematic Qualitative Analysis Detection of nitrogen, sulphur and halogens in an organic compound

Class 12th
CBSE Board

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Experiments

1. Preparation of one lyophilic and one lyophobic sol
2. Study of the role of emulsifying agents in stabilizing the emulsion of different oils.
3. Chemical kinetics:
    a. Effect of concentration and temperature on the rate of reaction between Sodium Thiosulphate and Hydrochloric acid.
    b. Reaction of Iodide ion with Hydrogen Peroxide at room temperature using different concentrations of Iodide ions.
    c. Reaction between Potassium Iodate, (KIO_3) and Sodium Sulphite: (Na_2SO_3) using starch solution as an indicator (clock reaction).
4. Thermochemistry:
    a. To determine the water equivalent of the calorimeter by mixing warm and normal water and determine the enthalpy of dissolution of given salt (Ammonium chloride).
    b. Enthalpy of neutralization of strong acid (HCl) and strong base (NaOH).
    c. Determination of enthalpy change during interaction (Hydrogen bond formation) between Acetone and Chloroform.
5. Electrochemistry: Variation of cell potential in $Zn/Zn^{2+}||\ Cu^{2+}/Cu$ with change in concentration of electrolytes ($CuSO_4$ or $ZnSO_4$) at room temperature.
6. Chromatography: Separation of pigments from extracts of leaves and flowers by paper chromatography and determination of Rf values.

Class 12th
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Experiments

7. Redox titration:
    a. Determination of concentration/ molarity of $KMnO_4$ solution by titrating it against a standard solution of oxalic acid.
    b. Determination of concentration/ molarity of $KMnO_4$ solution by titrating it against a standard solution of Ferrous ammonium sulphate.
8. Systematic Qualitative analysis of Anions: NO_2^- , Cl^- , NO_3^-
9. Systematic Qualitative analysis of Cations: Cu^{2+}, Fe^{3+}, Ni^{2+}
10. Tests for the functional groups present in organic compounds: Unsaturation, alcoholic, phenolic, aldehydic, ketonic, carboxylic and amino (primary) groups
11. Preparation of Inorganic compounds
    a. Preparation of double salt of Ferrous Ammonium Sulphate or Potash Alum.
    b. Preparation of Potassium Ferric Oxalate.
12. Preparation of Organic compounds
    a. Acetanilide
    b. Di-benzalacetone
    c. p-Nitroacetanilide
    d. Aniline yellow
    e. 2-Naphthol Aniline dye.
13. Qualitative analysis of proteins
14. Qualitative analysis of carbohydrates
15. Qualitative analysis of oils and fats

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