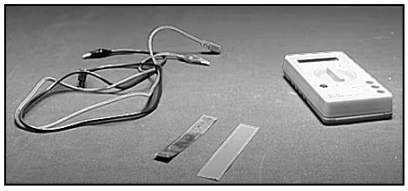
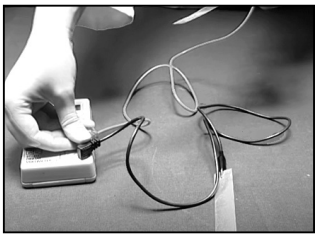
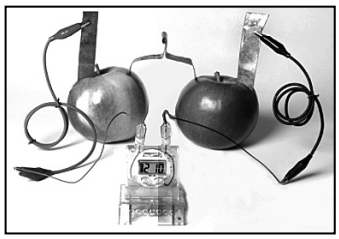
Art Integration

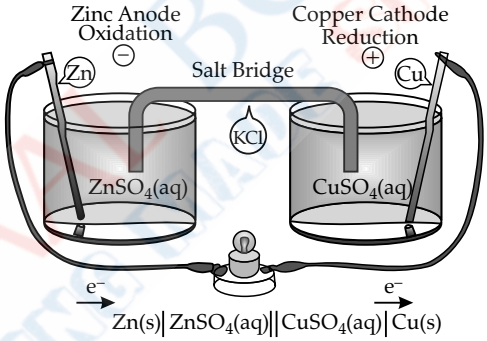
Subject	Chemistry
Chapter(Topic)	Electrochemistry (Galvanic cell/ voltaic cell)
Art-Integration	Working model of Voltaic cell
Objective	Student will able to: Understand the working principle of voltaic cell using household materials. Analyse the working of voltaic cell in the laboratory Understand the concept of salt-bridge and redox reaction. Able to relate with real world.
Material required	A voltmeter, a copper strip, a zinc strip, 2 apples, a metal strip for connectivity of apples and two different coloured wires (black and red)
Methodology	A working model using materials available at home. **1.** Take two wires, 2 strips of copper and zinc and a voltmeter. **2.** Connect strips with voltmeter at marked positive and negative terminals **3.** Take two apples and punch two strips to them connected with voltmeter. **4.** Attach a metal strip as a salt bridge to connect both apples and complete the circuit.  



5. Note the reading of voltmeter when attched with salt bridge.
6. You will recognise that voltmeter shows a potential difference when terminals are connected.
7. Repeat the procedure by connecting and disconnecting the positive and negative terminals.
8. Why did this happen? Apples are rich in copper and zinc metals where copper strip act as cathode and zinc strip act as anode.
9. The experiement can be performed in laboratory using CuSO4 and ZnSO4 solutions.
10. Copper is reduced and zinc is oxidised. This is how cell converts the chemical energy liberated during the redox reaction

$$Zn(s) + Cu^{2+}(aq) \rightarrow Zn^{2+}(aq) + Cu(s)$$

to electrical energy and has a calulated electrical potential equal to 1.1 V.



Learning Outcomes

Student will able to analyse the working of a voltaic cell at home as well as in the laboratory.

Recognise the equipments that involves the voltaic or galvanic cell.

Resources

Concept-Voltaic Cell

Concept-Galvanic Cell

Concept-Copper-Zinc Voltaic Cell

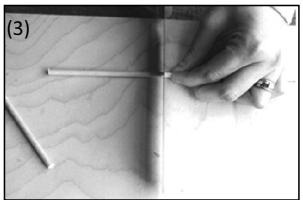
Art Integration

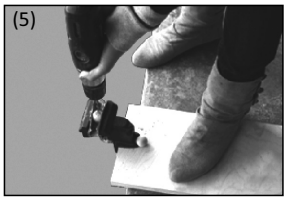
Subject	Chemistry
Chapter	d and f-block elements (Different Elements with properties)
Art-Integration	Flash Cards
Objective	Student will able to: Understand the position of elements in periodic table. Recognise the different types of properties through visuals. Able to relate with real world.
Material required	30-40 cards of length 3 by 5 inches, different colourful markers
Methodology	Make flash cards of some d- block elements with atomic number and physical/ chemical properties.

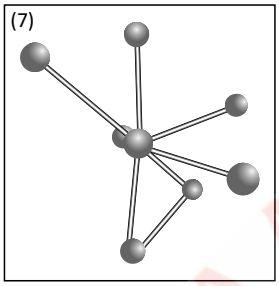
	
Learning Outcomes	Student will able to: Understand the different elements arrangement in periodic table. Recognise the different physical pro.perties. Able to utilise the properties in chemical reactions like redox reactions that we see around us.
Resources	Concept-Physical Properties of Transition Metals Concept- Transition metals and their properties

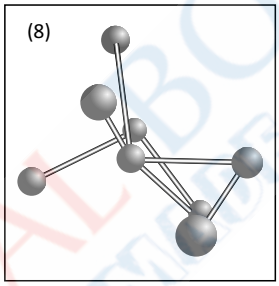
Art Integration

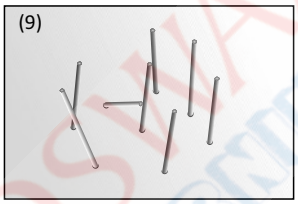
Subject	Chemistry
Chapter	Coordination Compounds
Art-Integration	3D-Coordination polyhedrons
Objective	Student will able to: Understand the molecular geometry with hybridization. Able to relate with real world.
Material required	Wooden sticks Wooden balls Wood glue Cardboard Spray paint (in different colours) Sand paper Pencil Drill
Methodology of Art-Integration	Procedure: 1. Measure and mark with a pencil every 5 inches all the way to the end of wooden sticks. 2. Cut sticks according to your measurements. 3. Use sand paper to make stick's edges smooth. 4. Clamp wooden balls and drill holes into each ball according to unique molecule design. 5. Play around with your structures. 6. Spray paint to sticks and balls of the color you choose. 7. Let it dry in between painting. Put it back together and enjoy the structures!



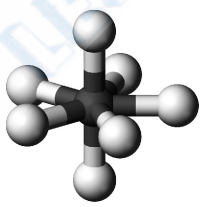




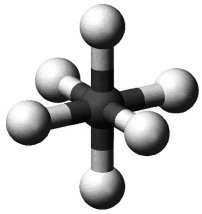




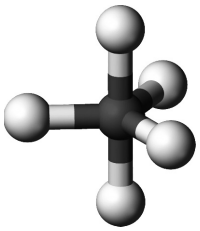
8. Present the structures on the carboard with their molecular geometry and hybridization of the structures.



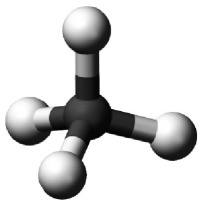
Pentagonal bipyramidal



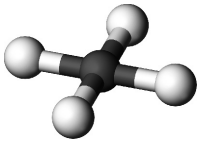
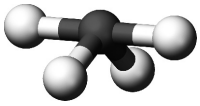
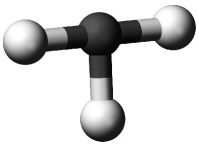
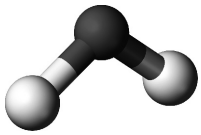
Square bipyramidal



Trigonal bipyramidal

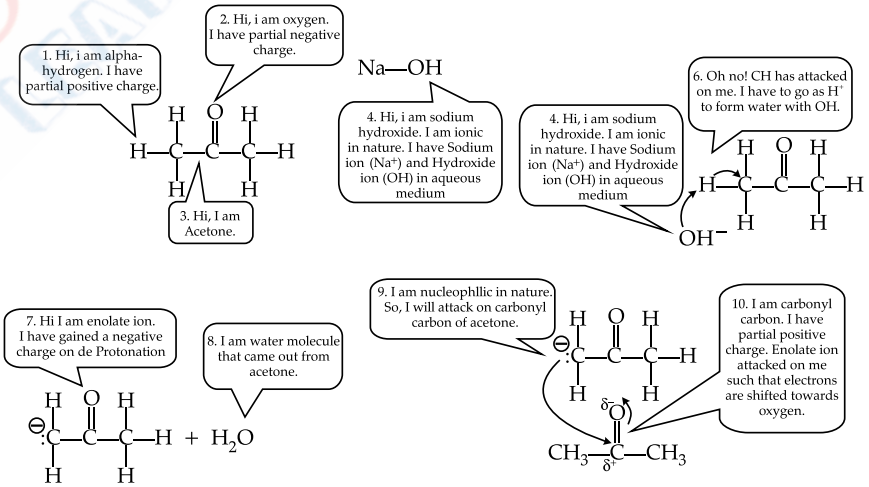


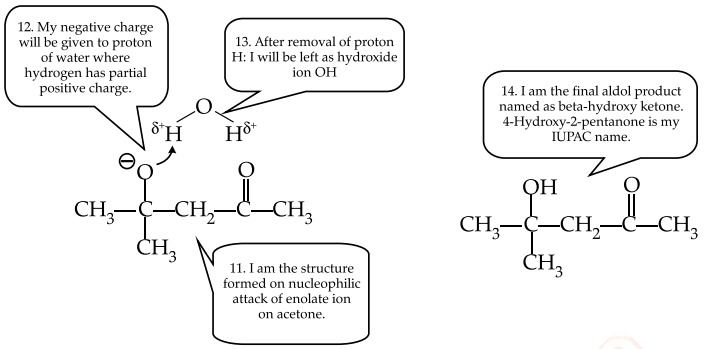
Tetrahedral

	 Square planer  See-saw  T-shaped  Bent shaped
Learning Outcomes	Student will learn Shapes of coordination compounds. Student will understand Coordination number by counting balls attached to central atom. Student will be able to analyse Hybridization by identification of axial and equatorial bonds involved.
Resources	Concept- Coordination Compounds: Geometry and Nomenclature

Art Integration

Subject	Chemistry
Chapter	Aldehyde, ketone and Carboxylic acid (Aldol reaction of propane)
Art-Integration	A Role Play for Aldol Reaction Mechanism
Objective	Student will able to: Understand mechanism through conversation. Able to recognise concepts of nucleophilic, electrophilic nature of atoms/molecules.
Methodology	A conversation between atoms and molecules to explain aldol reaction mechanism.



	
Learning Outcomes	Student will: Learn the reaction mechanisms of aldol reactions. Analyse the nature of nucleophiles and electrophiles to proceed reactions. Understand IUPAC nomenclature to name the compounds. Understand the tautomerism concept from enolate ion.
Resources	Concept- Aldol condensation Aldol Condensation Crossed Aldol Condensation of Acetone and Benzaldehyde

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