

MINISTRY OF GENERAL EDUCATION

PROVINCIAL SCHEMES OF WORK FOR CHEMISTRY 5070

Subject: CHEMISTRY 5070 Grade: 12 Term: One Year: 20.... Teacher: ----- periods per week: 6

WEEK	TOPIC	SUB-TOPIC	SPECIFIC OUTCOMES	METHODOLOGY	SUGGESTED EXPERIMENTS	REFERENCES
1	CHEMISTRY AND ELECTRICITY	Conductors	<p>Classify conductors and non-conductors Conductors, being metals such as copper, aluminium, silver and Non-conductors being non-metals such as sulphur, phosphorus, except carbon in form of graphite.</p>	-Question and answer		-New certificate chemistry

2		Electrolysis	<p>Classify electrolytes and non-electrolytes Difference between electrolytes and non-electrolytes: Electrolytes as ionic compounds and non- electrolytes as covalent compounds.</p> <p>Describe what electrolysis is Electrolysis: As decomposition of electrolyte using electricity in an electrolytic cell.</p>	-Group Discussion		-Complete Chemistry
3			<p>Describe the products at the electrodes during electrolysis of molten binary ionic compounds. Products by electrolysis of molten binary ionic compounds: metals at the cathode by reduction, non-metals at the anode by oxidation</p> <p>Describe the products at the electrodes during electrolysis of aqueous ionic solutions. Products by electrolysis of aqueous ionic solutions: Refer to selective discharge of ions given conditions. Electrolytes should include molten lead (II) bromide, molten aluminium oxide, dilute sulphuric acid (acidified water), concentrated hydrochloric acid,</p>	Question and answer Demonstration Discussion		Complete chemistry senior Secondary chemistry 10 Chemistry

			concentrated aqueous sodium chloride (brine) using carbon electrodes, and aqueous copper (II) sulphate using carbon and copper electrodes.			
4			<p>Describe the industrial applications of electrolysis. Applications of electrolysis: Such as extraction of aluminium from its oxide, copper refinery and electroplating.</p> <p>Calculate the quantity of electrolytic products. The quantity of electrolytic products: Using Faradays laws</p>	Demonstration Discussion		GCSE Chemistry
5		Simple cells (chemical cell)	<p>Describe what a chemical cell is A chemical cell: Two different metals connected together and dipped in an electrolyte to produce electricity.</p> <p>Compare electrolytic cells and simple cells Types of cells: Similarities such as oxidation at the anode and reduction at the cathode. Differences such as cathode being negative in electrolytic cell while positive in simple cell and vice versa for the anode. Simple cell must use two different electrodes while electrolytic cell can use any.</p>	Demonstration Discussion		GCSE Chemistry Senior Secondary chemistry 10

6	METALS	General properties of metals	<p>Describe diagrammatic representations of pure metals The diagrammatic representations of pure metals: Similar nuclei positive ions in a 'sea' of delocalised electrons.</p> <p>Describe the physical properties of metals. The physical properties of metals: in terms of density, melting points, boiling points, appearance</p> <p>Describe the chemical properties of metals The chemical properties of metals: All metals are electropositive as illustrated in the reaction with air, water / steam, dilute non-oxidizing acids, aqueous solutions of other metal ions.</p>	<p>Demonstration</p> <p>Discussion</p>		<p>GCSE Chemistry</p> <p>Senior Secondary chemistry 10</p>
7		Reactivity and Electro Chemical Series	<p>Describe the reactivity series of metals The reactivity series of metals: As arrangement of metals in the order of either their increasing or decreasing order of reactivity as being potassium, sodium, calcium, magnesium, aluminium, zinc, iron, lead, (hydrogen), copper and silver</p> <p>Explain the apparent non reactivity of aluminium.</p>	<p>Demonstration</p>		

			<p>Apparent non reactivity of aluminium: Due to the presence of adhesive oxide/coat. Reactivity of aluminium due to adhesive coat</p> <p>Demonstrate an order of reactivity. An order of reactivity: from a set of experimental results Such as reduction of oxides of metals by other metals.</p> <p>Describe the effects of heat on hydroxides, carbonates, nitrates of metals and ammonium compounds. Effects of heat on hydroxides, carbonates, nitrates of metals and ammonium compounds: As related to the reactivity/stability of the metallic ion present in the compound. Compounds of more reactive metals difficult to decompose while compounds of less reactive metals easily decompose.</p>			
8			<p>Describe the extraction of copper, iron, aluminium and zinc from their ores. Extraction of copper, iron, Aluminium and zinc: Chemical and electrolytic reduction. Chemical reducing agents being Carbon, carbon monoxide, and hydrogen.</p>	Demonstration		

9			<p>Describe the extraction of copper, iron, aluminium and zinc from their ores. Extraction of copper, iron, Aluminium and zinc: Chemical and electrolytic reduction. Chemical reducing agents being Carbon, carbon monoxide, and hydrogen. (<i>Continued</i>)</p> <p>Describe the uses of copper, iron, zinc and aluminium Uses of copper, iron, zinc and aluminium: Such as electrical wires, construction, aircraft parts.</p> <p>Explain the harmful effects of some metals. Harmful effects of metals: Such as lead poisoning (brain damaging), sodium ions in raising high blood pressure, alzhermia by aluminm</p>	<p>Question and Answer</p> <p>Demonstration</p>		<p>New certificate chemistry</p> <p>Chemistry 10</p>
10		Alloys	<p>Describe what an alloy is An alloy: As mixture of two or metals/carbon such as steel, brass, bronze</p> <p>Describe diagrammatic representations of alloys. The diagrammatic representations of alloys: Different nuclei positive ions in a 'sea' of delocalised electrons</p> <p>Explain the advantages of using alloys</p>	discussion		

			<p>over pure metals. Advantages of using alloys: Such as alloys exhibiting better properties compared to a pure metal (conductor, strength, weight ratio, hardness)</p> <p>Identify common uses of alloys Common uses of alloys: Such as cutlery, food packaging, aircraft.</p>			
11		Corrosion	<p>Describe what corrosion is Corrosion: As chemical wearing of metals resulting from attack by atmospheric oxygen in presence of moisture.</p> <p>Relate corrosion to the reactivity of metals. The corrosion to the reactivity of metals: As more reactive metals easily corrode while less reactive metals do not easily corrode.</p> <p>Describe the different methods of preventing corrosion. The methods of preventing corrosion: Such as sacrificial protection, painting, greasing/oiling, alloying and galvanising.</p>	Demonstration	•	<p>New certificate chemistry</p> <p>GCSE Chemistry</p>

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