

## Lesson Plan

**Name** : Ankita  
**Discipline** : Common for all branches  
**Year** : 1<sup>st</sup>  
**Subject** : Applied Chemistry  
**Code** : 180014  
**Duration** : 16 weeks (09/01/2020 to 30/04/2020)  
**Work Load** : 2 Lectures and 1 Practical per week

Week	Theory		Practical	
	Lecture Day	Topic (including assignment/ test)	Practical Day	Topic
1 <sup>st</sup>	1 <sup>st</sup>	General Steps of metallurgy a) Crushing b) Pulverization of ore c) Concentration or purification of ore: (i) Gravity separation method (ii) froth flotation method d) Oxidation of ore: i) Roasting. ii) Calcination  Definition of metallurgy, types of metallurgy	1 <sup>st</sup>	To determine the percentage of ash in given sample of coal.
	2 <sup>nd</sup>	General Steps of metallurgy e) Crushing f) Pulverization of ore g) Concentration or purification of ore: (j) Gravity separation method (ii) froth flotation method h) Oxidation of ore: i) Roasting. ii) Calcination	2 <sup>nd</sup>	To determine the percentage of ash in given sample of coal.
2 <sup>nd</sup>	1 <sup>st</sup>	Reduction: i) Smelting (Pyrometallurgy) ii) Electrolytic reduction	1 <sup>st</sup>	To determine the percentage of ash in given sample of coal.
	2 <sup>nd</sup>	Refining of Metal: Electrolytic refining	2 <sup>nd</sup>	To determine the percentage of ash in given sample of coal

3 <sup>rd</sup>	1 <sup>st</sup>	Definition of alloy, types of alloys and purpose of alloying.	1 <sup>st</sup>	<b>Practical Practice</b>
	2 <sup>nd</sup>	Definition of fuel, classification of fuel a) on the basis of physical state b) on the basis of source.	2 <sup>nd</sup>	<b>Practical Practice</b>
4 <sup>th</sup>	1 <sup>st</sup>	Test	1 <sup>st</sup>	To determine the percentage of volatile and non volatile substance in given mixture.
	2 <sup>nd</sup>	Characteristics of good fuel, advantages of gaseous fuel over solid fuels. Definition of calorific value, HCV and LCV.	2 <sup>nd</sup>	To determine the percentage of volatile and non volatile substance in given mixture.
5 <sup>th</sup>	1 <sup>st</sup>	Coal- Proximate analysis of coal and its importance.	1 <sup>st</sup>	To determine the percentage of volatile and non volatile substance in given mixture.
	2 <sup>nd</sup>	Fuel quality rating- octane number and cetane number (definition only)	2 <sup>nd</sup>	To determine the percentage of volatile and non volatile substance in given mixture.
6 <sup>th</sup>	1 <sup>st</sup>	Gaseous fuel: Composition, calorific value and application of CNG, LPG and biogas.	1 <sup>st</sup>	<b>Practical Practice</b>
	2 <sup>nd</sup>	Gaseous fuel: Composition, calorific value and application of CNG, LPG and biogas.	2 <sup>nd</sup>	<b>Practical Practice</b>
7 <sup>th</sup>	1 <sup>st</sup>	Type of water: Soft and hard water.	1 <sup>st</sup>	To determine the viscosity of lubricant by using Redwood viscometer.
	2 <sup>nd</sup>	Types of hardness of water . Units of hardness of water: ppm, mg/L (with simple numericals).	2 <sup>nd</sup>	To determine the viscosity of lubricant by using Redwood viscometer.
8 <sup>th</sup>	1 <sup>st</sup>	Test	1 <sup>st</sup>	To determine the viscosity of lubricant by using Redwood viscometer.
	2 <sup>nd</sup>	Disadvantages of using hard water in boiler. a) Scale and sludge formation b) Boiler Corrosion c) Caustic embrittlement	2 <sup>nd</sup>	To determine the viscosity of lubricant by using Redwood viscometer.

9 <sup>th</sup>	1 <sup>st</sup>	Disadvantages of using hard water in boiler. a) Scale and sludge formation b) Boiler Corrosion c) Caustic embrittlement	1 <sup>st</sup>	<b>Practical Practice</b>
	2 <sup>nd</sup>	Qualities of drinking (potable) water	2 <sup>nd</sup>	<b>Practical Practice</b>
10 <sup>th</sup>	1 <sup>st</sup>	Lubricant and lubrication.	1 <sup>st</sup>	To determine total acid number (TAN) or Total acid value of given lubricant (liquid).
	2 <sup>nd</sup>	Functions of lubricants		
11 <sup>th</sup>	1 <sup>st</sup>	Classification of lubricants: solid, semisolid and liquid lubricants with examples.	1 <sup>st</sup>	To determine total acid number (TAN) or Total acid value of given lubricant (liquid).
	2 <sup>nd</sup>	Type of lubrications – hydrodynamic and boundary lubrication with illustrative diagrams. Properties of lubricants:- Physical properties- viscosity		
12 <sup>th</sup>	1 <sup>st</sup>	Test	1 <sup>st</sup>	<b>Practical Practice</b>
	2 <sup>nd</sup>	Properties of lubricants:- Chemical properties- TAN or TAV (Total acid number), emulsification, aniline point and iodine value. viscosity index, cloud point, pour point, flash point, fire point, oiliness	2 <sup>nd</sup>	<b>Practical Practice</b>
13 <sup>th</sup>	1 <sup>st</sup>	Definition of polymer, Monomer, Degree of Polymerization	1 <sup>st</sup>	To determine total acid number (TAN) or Total acid value of given lubricant (liquid).
	2 <sup>nd</sup>	Monomer and uses of PE, PVC, PS, Teflon, Nylon-66, Bakelite		
			2 <sup>nd</sup>	To determine total acid number (TAN) or Total acid value of given lubricant (liquid).

<b>14<sup>th</sup></b>	<b>1<sup>st</sup></b>	Brief introduction to addition and condensation polymers with suitable examples (PE, PVC, PS, Teflon, Nylon-66, Bakelite).	<b>1<sup>st</sup></b>	Detection of iron metal in the given solution of rust.
	<b>2<sup>nd</sup></b>	Brief introduction to addition and condensation polymers with suitable examples (PE, PVC, PS, Teflon, Nylon-66, Bakelite).	<b>2<sup>nd</sup></b>	Detection of iron metal in the given solution of rust.
<b>15<sup>th</sup></b>	<b>1<sup>st</sup></b>	<ul style="list-style-type: none"> <li><b>Assignment Work on Organic Chemistry</b></li> </ul>	<b>1<sup>st</sup></b>	<b>Practical Practice</b>
	<b>2<sup>nd</sup></b>	Definition of plastics, thermoplastic and thermosetting polymer with example, difference between thermoplastic and thermosetting polymers.	<b>2<sup>nd</sup></b>	<b>Practical Practice</b>
<b>16<sup>th</sup></b>	<b>1<sup>st</sup></b>	Definition of plastics, thermoplastic and thermosetting polymer with example, difference between thermoplastic and thermosetting polymers.	<b>1<sup>st</sup></b>	Detection of iron metal in the given solution of rust.
	<b>2<sup>nd</sup></b>	Uses of polymer and plastic in daily life and in industries. And Test	<b>2<sup>nd</sup></b>	Detection of iron metal in the given solution of rust.