Lesson Plan

Name of the Faculty : **Sonia**

Discipline : **Common for all Classes**

Semester : **2nd**

Subject : **Applied Chemistry -II**

Paper Code : **170024**

Lesson Plan Duration : **15 weeks (from January 2018 to April 2018)**

Week	Theory		Practical	
	Lecture Day	Topic (including assignment/ test)	Practical Day	Topic
1st	1st	General metallurgical terms and operations with reference to iron, copper and aluminium(Lecture-1)	1st	Gravimetric analysis and apparatus used in gravimetric analysis
	2nd	General metallurgical terms and operations with reference to iron(Lecture-2)		
	3rd	General metallurgical terms and operations with reference to iron(Lecture-3)		
2nd	1st	Manufacture of steel- Open hearth process	1st	Determination of percentage purity of commercial sample of blue vitriol using N/20 Na2S2O3
	2nd	Alloys- definition and purpose of alloying		
	3rd	Type of alloys – ferrous and non-ferrous alloys, properties and applications of ferrous alloys- invar, nichrome, stainless steel, alnico		
3rd	1st	Properties and applications of non-ferrous alloys – brass, bronze, duralumin, magnalium and solder	1st	**Practice Practical 1 and 2**
	2nd	• **Home Work Checking** • **Assignment-1 Distribution:** On any one of the three topics: i) List of iron, aluminium and copper metal ores and place of occurrences in India ii) Names of steel plants situated in India. iii) Enlist hydro power plants and nuclear power plants in India		
	3rd	Definition of corrosion, its types and factors affecting corrosion rate		
4th	1st	Theories of dry (chemical) corrosion- Pilling Bedworth rule	1st	Gravimetric estimation of moisture in the given coal sample (proximate analysis)
	2nd	Theories of wet corrosion in acidic atmosphere by hydrogen evolution mechanism		
	3rd	Definition of passivity in metals as per galvanic series		
5th	1st	Corrosion control: • Metal coatings – Cathodic protection(Sacrificial protection and impressed current voltage), Cementation on Base Metal Steel – Application of Metal Zn (Sheradizing),Cr (Chromozing) and Al (Calorizing), • Inorganic coatings – Anodizing and	1st	Determination of percentage composition of volatile/non volatile matter in

		phosphating		the given coal sample
	2nd	Corrosion control: • Organic coatings - use of paints varnishes and enamels • Internal corrosion preventive measures- alloying (with reference to passivating, neutralizing and inhibition) and heat treatment (quenching, annealing)		
	3rd	• **Class Work Checking/ Assignment-1 Checking**		
6th	1st	• **Test-1**	1st	**Practice Practical 3 and 4**
	2nd	Definition of fuel, classification of fuels, characteristics of good fuel, relative merits of gaseous, liquid and solid fuels		
	3rd	Calorific value-higher calorific value, lower calorific value		
7th	1st	Determination of calorific value of solid or liquid fuel using Bomb calorimeter and numerical examples	1st	Gravimetric estimation of ash content in the given coal sample (proximate analysis)
	2nd	Coal - types of coal and proximate analysis of coal • **Assignment-2 Distribution**		
	3rd	Fuel rating – Octane number and Cetane number, fuel-structural influence on Octane and Cetane numbers		
8th	1st	Gaseous fuels – chemical composition, calorific value and applications of natural gas (CNG), LPG, producer gas, water gas and biogas	1st	Determination of viscosity of given liquid using Redwood viscometers
	2nd	Elementary ideal on – hydrogen as future fuels, nuclear fuels		
	3rd	• **Revision**		
9th	1st	• **Test-2**	1st	**Practice Practical 5 and 6**
	2nd	Definition of Lubricant and lubrication, type of lubrications –hydrodynamic, boundary lubrication with illustrative diagrams		
	3rd	Classification of lubricants–liquid lubricants, solid lubricants with examples		
10th	1st	Classification of lubricants- semi-solid lubricants and synthetic lubricants with examples	1st	Determination of flash point of given lubricating oil using Able's flash point apparatus
	2nd	Physical properties of lubricant –viscosity and viscosity index, cloud point and pour point, flash point and fire point, oiliness		
	3rd	Chemical properties of lubricant - total acid value or number (TAV or TAN), carbon residue, emulsification factor and iodine value		
11th	1st	Designation of lubricating oils according to Society of Automotive Engineers (SAE)	1st	**Practice Practical 7**
	2nd	Cutting fluids – applications of cutting fluids, types and the factors that govern the selection of cutting fluids		
	3rd	• **Class Work Checking/ Assignment Checking-2**		
12th	1st	Definition and types with suitable examples and applications of- Ceramics, Refractory and Composite materials	1st	To study the effect of metal

	2nd	Glass-chemical composition and application of Soda • **Assignment-3 Distribution**		coupling on corrosion of iron
	3rd	Chemical composition and application of Borosilicate and lead glasses		
13th	1st	Paint, varnish and enamels- definition, constituents	1st	Detection of iron metal in the given solution of rust(solution of rust in HCl be provided)
	2nd	Advantages of Paint, varnish and enamels		
	3rd	Definition of polymer, monomer and degree of polymerization		
14th	1st	Brief introduction to addition and condensation polymers with suitable examples (PE, PS, PVC, Teflon, Nylon -66 and Bakelite)	1st	**Practice Practical 8 and 9**
	2nd	Definition of plastics, thermo plastics and thermo setting plastics with suitable examples, distinctions between thermo plastics and thermo settings		
	3rd	Applications of polymers in industry and daily life		
15th	1st	• **Revision/ Home Work Checking**	1st	**Practical Test**
	2nd	• **Class Work Checking/ Assignment-3 Checking**		
	3rd	• **Test-3**		