"PVC"NSSK Govt Polytechnic Bilaspur at Kalol

Lesson Plan (Theory)

Branch : Ele. Engg. & Mech. Engg. **Semester:** 2nd
Subject Applied Chemistry-II **Session:** March-June 2022
Teacher Nidhi Katoch **Laboratory:** Chemistry Lab

Sr.No.	No. of Lectures	Chapter/ Unit Description	Detail of Contents	Refrence Resources	Remarks
1	13	Metallurgy	1.1 General metallurgical terms/operations and principles.1.2 Extraction of pure iron, copper and aluminum from their chief ores1.3 Manufacture of steel by open hearth process.1.4 Alloys: Types of alloys (ferrous and non ferrous) purposes of alloying, composition, propertie sand uses of – invar, stainless steel, alnico, nichrome, brass, bronze, duralumin, magnalium and solder.	Applied Chemsitry by A.N. Singha and A. D. Sharma, Applied Chemistry II by S.C. Ahuja	
2	8	Corrosion	2.1 Definition and electro chemical theory of corrosion.2.2 Passivation or Passivity of metals (e.g. Ti, Cr, Fe and Al).2.3 Preventions and control measures: (i) Internal measures (purification of metals, alloying with corrosion resistant elements, heat treatment) (ii) External measures -Protective coatings –(a) Metallic - sacrificial anodic and cathodic protection(b) Non-metallic coating - chemical coating and painting(c) Application of inhibitors and alteration of corrosive environment	Applied Chemsitry by A.N. Singha and A. D. Sharma, Applied Chemistry II by S.C. Ahuja	
3	16	Fuels	3.1 Introduction, combustion & classification of fuels. 3.2 Characteristics of good fuel 3.3 Calorific value, determination of calorific value by Bomb calorimeter and Dulong's formula (equation to be assumed), numerical problems related to Dulong's formula only 3.4 Fuel rating: Octane number, Cetane number, influence of chemical composition and structure on fuel rating 3.5 Gaseous fuels: Composition, calorific value and applications of Natural gas, LPG, CNG, water gas, producer gas and biogas. 3.6 Hydrogen as a future fuel. 3.7 Merits and demerits of gaseous fuels over solid and liquid fuels.	Applied Chemsitry by A.N. Singha and A. D. Sharma, Applied Chemistry II by S.C. Ahuja	

Sr.No.	No. of Lectures	Chapter/ Unit Description	Detail of Contents	Refrence Resources	Remarks
4	7	Lubricants	4.1 Definition and Functions of lubricants. 4.2 Classification of lubricants - Liquid lubricants, Semi-solid lubricants and solid lubricants. 4.2 Mechanism of lubrication -Thin film and Thick film lubrication. 4.3 Characteristics of good lubricants 4.4 Properties of lubricants: such as oiliness, emulsification, flash and fire point, volatility, viscosity and viscosity index, cloud and pour point, acid value, sponification value & coke number	Applied Chemsitry by A.N. Singha and A. D. Sharma, Applied Chemistry II by S.C. Ahuja	
5	6	Paints and varnishes	5.1 Constituent of paints, characteristics of good paint 5.2 Constituent and characteristics of varnishes 5.3 Constituent of enamels 5.4 Uses of paints, varnishes and enamels	Applied Chemsitry by A.N. Singha and A. D. Sharma, Applied Chemistry II by S.C. Ahuja	
6	6	Refractories	6.1 Introduction and characteristics of good refractory materials 6.2 Types and chemical composition of acidic, basic and neutral refractories 6.3 Applications of refractories	Applied Chemsitry by A.N. Singha and A. D. Sharma, Applied Chemistry II by S.C. Ahuja	

Signature of Teacher
Nidhi Katoch Lecturer Chemistry

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"PVC"NSSK Govt Polytechnic Bilaspur at Kalol

Lesson Plan (Practical)

Branch :	Ele. Engg. & Mech. Engg.	**Semester:**	2nd
Subject	Applied Chemistry-II	**Session:**	March-June 2022
Teacher	Nidhi Katoch	**Laboratory:**	Chemistry Lab

Practical No	Description of Practical	Refrences for Procedural Write Up	Likely Dates	Actual Dates	Sig
1	1. Estimation of copper in the given copper ore solution by titrating against standard solution(N/20) of sodium thiosulphate	Engineering Chemistry-Sunita Rattan	4th week of March		
2	2. Estimation of total dissolved salts in the given sample of water gravimetrically	Experimental Chemistry by Vogel	1st Week of April		
3	3. Estimation of moisture in the given coal sample gravimetrically	Engineering Chemistry-Sunita Rattan	3rd Week of April		
4	4. Estimation of ash in the given coal sample gravimetrically	Experimental Chemistry by Vogel	1st week of May		
5	5. Determination of viscosity of given liquid by Red Wood viscometer	Experimental Chemistry by Vogel	3rd week of May		
6	6. Determination of total acid value (Total Acid Number TAN) of a lubricating oil.	Experimental Chemistry by Vogel	2nd week of June		

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