

GOVERNMENT POLYTECHNIC JAJPUR
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DEPARTMENT OF METALLURGY

Discipline: Metallurgy	Semester: 4th	Name of the Teaching faculty: P ARADHANA
Subject: nonferrous extractive metallurgy	No of Days/Week class allotted: 3	Semester from Date: 22/12/25 To Date: 18/4/26 No of weeks: 17
Week	Class Day	Topics
1st	1 st	Definition Ores and minerals, gangue, flux and slag, matte and speiss
	2 nd	Non-ferrous ore reserves in India & non ferrous industries in India
	3 rd	Pyrometallurgical processes: roasting
2nd	1 st	different roasting methods
	2 nd	smelting and different smelting practices
	3 rd	Flash smelting, hearth smelting, matte smelting
3rd	1 st	method of distillation and sublimation
	2 nd	process of converting of matte and pig iron
	3 rd	Hydrometallurgical process: stages of hydrometallurgical process
4th	1 st	flow diagram for hydrometallurgical extraction
	2 nd	leaching and different leaching methods
	3 rd	leaching and different leaching methods
5th	1 st	Electrometallurgical proces
	2 nd	electrolysis
	3 rd	electro wining
6th	1 st	electro refining
	2 nd	Extraction of Metals from Sulphide Ores: Pyrometallurgical Extraction of Copper: roasting of copper ore
	3 rd	matte smelting of copper ore
7th	1 st	conversion of copper matte
	2 nd	refining of copper, uses of copper
	3 rd	Pyrometallurgical and Hydrometallurgical Method of Extraction of Zinc: roasting of zinc ore concentrates
8th	1 st	extraction by vertical retort process
	2 nd	refining of zinc
	3 rd	Leaching and preparation zinc base solution
9th	1 st	electrolysis of zinc solution &uses of zinc
	2 nd	Pyrometallurgical Method of Nickel Extraction: roasting of nickel ore
	3 rd	smelting of nickel concentrate
10th	1 st	smelting of nickel concentrate
	2 nd	refining of nickel & uses of nickel
	3 rd	Extraction of Metals from Oxide ores:
11th	1 st	Extraction of aluminum: Bayer's process of alumina production
	2 nd	Bayer's process of alumina production
	3 rd	fused salt electrolysis of alumina by Hall Heroult process
12th	1 st	fused salt electrolysis of alumina by Hall Heroult process

	2 nd	refining of aluminum, anode effect, uses of aluminum
	3 rd	refining of aluminum, anode effect, uses of aluminum
13th	1 st	Extraction of Metals from Halides: Extraction of Titanium
	2 nd	chlorination and mg reduction for titanium extraction
	3 rd	chlorination and mg reduction for titanium extraction
14th	1 st	refining of titanium
	2 nd	refining of titanium
	3 rd	Extraction of Precious Metals: Extraction of gold
15th	1 st	cyanidation for gold extraction & uses of gold.
	2 nd	cyanidation for gold extraction & uses of gold.
	3 rd	Extraction of Lithium: electrolysis for Li extraction
16th	1 st	properties of Li and uses of Li
	2 nd	Production of Secondary Metals
	3 rd	Production of Secondary copper
17th	1 st	Production of Secondary lead
	2 nd	Production of Secondary zinc
	3 rd	Production of Secondary aluminum metals from scraps

P. Malher
 22/12/25
 Lect. Metallurgy