Government Polytechnic,Sonepur Session: 2023-24			
Discipline:**Metallurgical Engineering**	Semester:**4th**	NameoftheTeachingFaculty: **Deepika Naik**	
Subject: **Principal extractive metallurgy (TH-03)**	No. of days/per week class allotted:**4**	Semester from Date: **16. 01. 2024** to Date: **26.04.2024** No. of weeks: 15	
Week	**Class No.**		**Lecture Topics**
1	1	Chapter -1: Defination of Metallurgy Terms	Definition of metallurgical terms
	2		Definition of ores and minerals
	3		Definition of gangue, flux and slag
	4		Definition of matte, speiss, metals and alloys
2	5		-do-
	6		Discussion on possible questionnaire
	7	Chapter-2: Principal of pretreatment of ores for metal extraction	Explanation of drying
	8		Definition of calcinations and its explanation
3	9		Definition of agglomeration process and different types of it
	10		-do-
	11		Explanation of briquetting process
	12		Explanation of nodulising process
4	13		Explanation of vacuum extrusion process
	14		Explanation of sintering process
	15		Explanation of pelletizing process
	16		-do-
5	17	Chapter-3:General methods and principles of extraction	Introduction to General Methods of Extraction
	18		Explanation of pyrometallurgical process
	19		Explanation of roasting and different roasting methods
	20		Explanation of Ellingham diagram(oxides)
6	21		Explanation of predominance area diagram(sulphides)
	22		Explanation of smelting and different smelting practices
	23		Explanation of flash smelting, Hearth smelting and Matte smelting
	24		Explanation of distillation and

			sublimation
7	25	Chapter-4: Basic approaches to refining	Converting of matte
	26		Converting of pig iron
	27		Explanation of hydrometallurgical process
	28		Explanation different stages of hydrometallurgical process
8	29		Flow diagram of hydrometallurgical process
	30		Explanation of leaching and different leaching methods
	31		Bacteria leaching and pressure leaching
	32		Discussion on possible questionnaire
9	33		Explanation of electrometallurgical process
	34		Definition of electrolysis, ionic conductivity, EMF series
	35		Faraday's law of electrolysis
	36		Explanation of faraday's 1^{st} law
10	37	Chapter-5: Principles of metal extractions	Explanation of faraday's 2^{nd} law
	38		Explanation of electro wining and electro refining
	39		Discussion on possible questionnaire
	40		Introduction to basic approaches to refining
11	41		Explanation of refining process
	42		Explanation of zone refining process
	43		Explanation of fire refining process
	44		Quiz test
12	45	Chapter- 6:principles of metallurgical thermodynamics reaction kinetics	Introduction to principal of metal extraction
	46		Principles of metallurgical thermodynamics, Zeroth law
	47		1^{st} law of thermodynamics
	48		2^{nd} law of thermodynamics
13	49		3^{rd} law of thermodynamics
	50		Concept of internal energy, entropy, enthalpy change and free energy
	51		Application of thermodynamics laws to metallurgical process
	52		Henry's law
14	53		Sivert's law

	54		Introduction to reaction kinetics
	55		First order reaction kinetics
	56		Application of 1st order reaction to metallurgical processes
15	57		Radioactive decay and half life period
	58		Revision Class-I
	59		Revision Class-II
	60		Important question discussion

16/01/2024
Prepared By
(D. Naik, Lect. Metallurgy)

16/01/24
HOD
Metallurgical Engg.

17/1/24
Academic – Coordinator