

DISCIPLINE - Metallurgy

Name of the Teacher - Sadashiba Patra

Semester - 5th (Session - 2021-2022)

From - 1/10/21 to 31/12/22

No of Classes per week - 4.

Subject - Th- 5 (Non- Ferrous Metallurgy)

Week	Day	Subjects to be covered	Remark
1 1/10 to 7/10 21	Day-1 (1/10) ✓ Day-2 (7/10)	Introduction about non-ferrous metals. Non-ferrous ore reserves & non-ferrous industries in India.	
Wk-2 8/10 to 14/10	Day-1 (8/10) ✓ Day-2 (9/10)	As above Extraction of Al (Minerals of Al, properties & uses of Al. Review of deposits & industries of Al)	
11/10 to 14/10 puja holidays			
Wk-3 15/10 to 21/10	15/10 to 20/10 Puja 21/10		
Wk-4 22/10 to 28/10	Day-1 (22/10) ✓ Day-2 (23/10) ✓ Day-3 (25/10) ✓ Day-4 (27/10)	Bayer's process of Al production. Fused salt electrolysis of Alumina (Hall-Herault process), Anode effect Various methods of Refining Al. Methods of treating low grade ore, Newer methods of	

Wk-5 29/10 to 4/11	Day-1 (29/10) Review of Al extraction & previous yr Question discussions
	Day-2. 30/10- Minerals, properties and application of tin
	Day-3 1/11/21 Concentration of Tin
	Day-4 2/11/21 Smelting of tin
Wk-6 5/11 to 11/11	Day-1(5/11) Refining of Tin Day-2(6/11) Minerals, properties, uses & deposits of Cu. Day-3(8/11) Concentration & Roasting of Cu-ore Day-5(10/11) Matte smelting of Cu-ore.
Wk-7 12/11 to 18/11	Day-1(12/11) Converting of Matte Day-2(13/11) Fire Refining & Electrolytic refining of copper Day-3(15/11) Minerals, properties, uses & deposits of lead. Day-4. Roasting & Sintering of Pb ore
Wk-8 19/11 to 25/11	Day-1 20/11 Blast F/C smelting of Pb. Day-2 22/11 Refining of Pb-bullion & Review of Cu & Pb extraction Day-3 24/11 Minerals, properties & uses of Zn. also deposits
	Day-4

Wk	Day	Subject to be covered	Remarks
Wk-9 26/11 to 2/12	Day-1 26/11.	Roasting of Zn Concentrate. Vertical Retort & Horizontal Retort Process	
	Day-2 27/11	Review of Retort process & refining of Zn.	
	Day-3 29/11	Leaching, Preparation Zn base solution & Electrolysis of Zn Solution	
	Day-4 4/12	Minerals, properties, uses & deposits of Nickel.	
Wk-10 8/12 to 9/12	Day-1 (3/12)	Roasting & smelting of Ni	
	Day-2 4/12	Review of Zn & Ni Extraction	
	Day-3 6/12	Minerals, properties, uses, deposits of titanium ore & treatments given to titanium ore	
	Day-4 8/12	Process of Chlorination, magnesium reduct ^{ion} for titanium extraction & Production of ductile Ti	
Wk-11 10/12 to 16/12/12	Day-1 10/12	Processes of refining Ti & review of Ti-extraction	
	Day-2 11/12	Introduction to precious metals	

Days	Day-3 13/12	Minerals, properties, deposits & uses of gold.
	Day-4- 15/12	Variet Introduction to various processes of gold extraction.
Wk-12 17/12 to 20/12	Day-1 17/12	Cyanidation process of gold extraction.
	Day-2 18/12	Gold extraction process adopted in India.
	Day-3 20/12	Purification of Gold & Review
	Day-4. 22/12	Introduction to Secondary metals
Wk-13 24/12 to 20/12	Day-1 24/12	Sources of various Secondary metals
	Day-2 27/12	Extraction of Secondary Cu.
	Day-3 29/12	Production of Secondary Pb
Wk-14 31/12-6/1 2022	Day-1 31/12	Production of secondary - Zn
	Day-2 1/1/22	Class not expected.
	Day-3 3/1/22	Production of secondary Al

Day 4. 5/11/22	Review of secondary/ related Production
VVK45 7/1 & 8/11/22	Day-1 Discussions related to pollution associated with non-fertilous industry
	Day-2 Discussion of probable questions.

~~Day 6
7/10/22~~