DISPLINE- METALLURGY

Name of the teacher- Sadashiba Patra

Semester-4th -Session-2022-23

From-14/02/2023 to 23/05/2023

Subject-Theory-5(Physical Metallurgy)

Wk no	Day	Subject to be convert	Remark
WK-1 14/02to 18/02/2023	Day-1	Introduction to Metallurgy & Physical Metallurgy	
	Day-2	Broad idea regarding solids, liquids, gases & crystals.	
	Day-3	Crystals & Crystallography	
WK-2 19/02 to 25/02/2023	Day-1	Space lattice & unit cell	
	Day-2	Types of crystal lattices, Bravis lattice & primitive.	
	Day-3	Define with sketch, BCC, FCC & CPH structure.	
	Day-4	Study of various parameters like packing factor, co-ordination no, effective no of atoms per unit cell.	
	Day-5	Miller indics of planes & directions.	
WK-3 26/2/2023 to 04/032023	Day-1	Isotropy & Anisotropy in metallic materials.	
	Day-2	Review & test on chapters covered till date.	
	Day-3	Introduction to imperfections in metallic materials & type.	
	Day-4	Study of various types of point defects.	
	Day-5	Study of various types of line defects.	
WK-4 05/03/2023 to 11/03/2023	Day-1	Study of volume and surface defects.	
	Day-2	Definition of alloys and solid solutions.	
	Day-3	Solidification & crystallisation	
WK-5 12/03/2023 to 18/03/2023	Day-1	Role of free energy/ thermodynamic potential in conversion of liquid to solid.	
	Day-2	Super cooling, under cooling & degree of super cooling.	
	Day-3	Mechanism of solidification.	
	Day-4	Nucleation, critical size of nucleaous.	
	Day-5	Spontaneous(Homogeneous & Heterogeneous nucleation) Relation between rate of nucleation and crystal growth.	
WK-6	Day-1	Ingot structure & shape of crystals.	

25/03/2022 To 25/03/2023			
	Day-2	Review of chapter-2	
	Day-3	Test on chapter-2	
	Day-4	Introduction to equilibrium diagram, definition & difference from phase diagram/importance of equilibrium diagram.	
	Day-5	Drawing of equilibrium diagram of binary systems.	
WK-7 26/03/2023 To 01/04/2023	Day-1	Types of Equilibrium diagram.	
	Day-2	Explanation of isomorphous type of equilibrium diagram with example.	
	Day-3	Explain eutectic & Peritectic equilibrium diagram with example.	
	Day-4	Peritectic & peritectoid type of equilibrium diagrams.	
	Day-5	Phase rule & lever Rule. Application of phase rule & lever rule.	
WK-8 02/04/2023 To 08/04/2023	Day-1	Introduction to iron carbon phase diagram.	
	Day-2	Drawing of Fe-Fe_3c phase diagram.	
	Day-3	Practice for drawing Fe-Fe_3c phase diagram.	
	Day-4	Different of phases & micro constituents of Fe-Fe_3c phase diagram.	
WK-9 09/04/2023 TO 15/04/2023	Day-1	Role of carbon with iron to differentiate steel & cast iron.	
	Day-2	Application of lever Rule to Fe-Fe_3c diagram.	
	Day-3	Difference Fe-Fe_3c, Fe-c iron graphite diagram.	
	Day-4	Review of equilibrium diagram.	
	Day-5	Class test on equilibrium diagram.	
WK-10 16/04/2023 TO 22/04/2023	Day-1	Class test on Fe-Fe_3c diagram.	
	Day-2	Introduction solution, solid solution & alloy.	
	Day-3	Study of various types of solid solutions.	
	Day-4	Difference between solid solution, chemical compound, mechanical mixture, intermediate compound.	
	Day-5	Various intermediate compounds, difference between ordered & disordered solid solutions.	
WK-11 23/04/2023 TO 29/04/2023		Internal exam & Review for I-A-Test.	

WK-12 30/04/2023 TO 06/05/2023	Day-1	Hume Ruthery's Rule and factors governing formation of solid solution.	
	Day-2	Class test on solid solution.	
	Day-3	Introduction to cast iron, Difference between steel & C.T, Alloy steel & alloy cast iron.	
	Day-4	Types of cast iron & properties.	
WK-13 07/05/2023 TO 13/05/2023	Day-1	Microstructure of different C.Is	
	Day-2	Review of C.I & class test	
	Day-3	Different between metallurgical & biological microscope.	
	Day-4	Different between metallurgical microscope.	
	Day-5	Working principle of optical. Metallurgical microscope.	
WK-14 14/05/2023 TO 20/05/2023	Day-1	Working principle of electron microscope and comparison between the two.	
	Day-2	Define magnifying, resolving power.	
	Day-3	Spherical & chromatic aberration.	
	Day-4	Sample preparation for metallographic study(Sample cutting, grinding, Rough polishing intermediate polishing, fine polishing &	
WK-15 21/05/2023 TO 23/05/2023	Day-1	Review of metallurgical microscope & class test on metallurgical microscope.	
	Day-2	Discussion of previous year questions.	