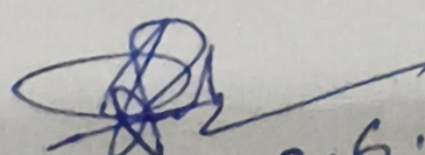
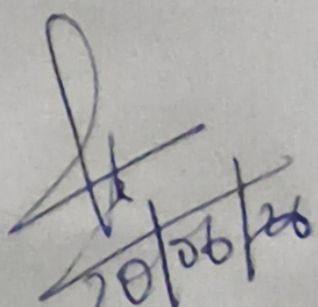


GOVT POLYTECHNIC MAYURBHANJ, TIKARPADA			
LESSON PLAN OF MINERAL PROCESSING ACADEMIC YEAR (2026-2027) WINTER			
DISCIPLINE: METALLURGY ENGINEERING		SEMESTER: 3 RD	NAME OF THE TEACHING FACULTY: SUBRAT KUMAR BEHERA
SUBJECT: MINERAL PROCESSING, COURSE CODE: MTPC203		NO OF DAYS/PER WEEK CLASS ALLOTTED:03	SEMESTER FROM DATE:01.07.2026, TO DATE:05.11.2026, NO OF WEEKS: 16
WEEK	CLASS NO	UNITS	LECTURE TOPICS
1	1	CHAPTER -1 MINERAL PROCESSING	INTRODUCTION CLASS
	2		Definition and importance, Role in the metallurgy industry, Various mineral resources of India
	3		Mineral and Ore, Types of Ores Metallic ores (e.g., iron, copper, gold)
2	4		Non-metallic ores (e.g., limestone, phosphate), scope and objective of Ore dressing,
	5		Different physical and chemical property of ore with their application to mineral dressing
	6		DISCUSSION ABOUT MINERAL AND ORE
3	7	CHAPTER -2 SIZE REDUCTION	Importance of Comminution in mineral processing,
	8		Mechanisms of size reduction, Blake jaw Crusher, Dodge jaw Crusher,
	9		Roll crusher & angle of Nip, capacity and reduction ratio of crusher,
4	10		Laws of Crushing, Ball mill operation, open circuit grinding and close circuit grinding
	11		REVISION
	12		DISCUSSION ABOUT BALL MILL AND JAW CRUSHER
5	13	CHAPTER -3 SIZING & CONCENTRATION METHODS	Ro-tap Sieve Shaker Particle size analysis, fundamentals & principle of jigging
	14		operations and application of Wilfley table, principle of heavy media separation,
	15		industrial process using heavy liquid and heavy suspensions (Du - Pont process & Chance process)
6	16		Principle of froth flotation, practical utility of frother, collector, modifier, activators, depressant (without physic – chemical Principle),
	17		Magnetic and Electrostatic separator with their application to mineral dressing (Two Drum Ball-Norton Wet magnetic separator
	18		High Tension or Huff's Electrostatic separation)
7	19		DISCUSSION ABOUT DUPONT PROCESS, FORTH FLOTATION METHOD
	20		JIGGING PROCESS AND MAGNETIC SEPARATOR
	21		ELECTRI SEPARATOR AND MAGNETIC SEPARATOR
8	22		REVISION
	23		SURPRISE TEST
	24		REVISION

9	25		DISCUSSION ABOUT CRUSHING MACHINE
	26		DISCUSSION ABOUT GRINDING METHOD
	27		DISCUSSION ABOUT RO-TAP SHIEVE SHAKER
10	28	CHAPTER -4 ADVANCED TOPICS IN MINERAL DRESSING	Advanced Comminution Techniques: High-Pressure Grinding Rolls (HPGR), Ultra-Fine Grinding (UFG)
	29		Microwave-Assisted Comminution, Advanced Gravity Separation Techniques: Multi-Gravity Separator (MGS),
	30		Advanced Flotation Techniques: Microbubble & Nanobubble Flotation
11	31		Magnetic & Electrostatic Separation: High- Intensity Magnetic Separation (HIMS),
	32		Sustainable & Eco-Friendly Mineral Processing: Dry Beneficiation Technique
	33		Zero-Waste Processing
12	34	REVISION IMPORTANT TOPICS	Advanced Comminution Techniques: High-Pressure Grinding Rolls (HPGR), Ultra-Fine Grinding (UFG)
	35		Microwave-Assisted Comminution, Advanced Gravity Separation Techniques: Multi-Gravity Separator (MGS),
	36		Advanced Flotation Techniques: Microbubble & Nanobubble Flotation
13	37		Magnetic & Electrostatic Separation: High- Intensity Magnetic Separation (HIMS),
	38		Sustainable & Eco-Friendly Mineral Processing: Dry Beneficiation Technique
	39		Zero-Waste Processing
14	40		REVISION
	41		GROUP DISCUSSION
	42		operations and application of Wilfley table, principle of heavy media separation,
15	43		Magnetic and Electrostatic separator with their application to mineral dressing (Two Drum Ball-Norton Wet magnetic separator
	44		Principle of froth flotation, practical utility of frother, collector, modifier, activators, depressant (without physic – chemical Principle),
	45		REVISION
16	46		PRE-SEMESTER
	47		GROUP DISCUSSION
	48		REVISION


 30.6.26
 S.K. Behera,
 Lect. Stage-II


 20/06/26
 HOD METALLURGICAL ENGG.
 GOVT. POLYTECHNIC MAYURBHARJ
 TIKARPADA