

GOVERNMENT POLYTECHNIC JAJPUR

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DEPARTMENT OF MINING ENGINEERING

LESSON PLAN (WINTER-2024)

Discipline: MINING	Semester: 5th	Name of the Teaching faculty: Prabhudutta Mishra
Subject: Surface Mining Technology	No of Days/Week class allotted: 4	Semester from Date: 01/07/24 To Date: 8/11/24 No of weeks: 15
Week	Class Day	Topics
1st	1st	i) Lesson plan, Syllabus ii) Importance of this Course, Course Outcomes iii) Exams, Class Tests, Introduction to the Surface Mining.
	2nd	State factors affecting choice of Open casting Mining method.
	3rd	Define stripping ratio.
	4th	Stripping ratio. Determine overburden/ore ratio.
2nd	1st	Find out cut off stripping ratio.
	2nd	Determine quarriable limit.
	3rd	State favorable conditions for mechanized Opencast Mines.
	4th	State limitations of large open pits.
3rd	1st	Define Box cut
	2nd	Determine the location of Box cut.
	3rd	Determine bench parameters- height, width & slope.
	4th	Determine length of bench for overburden and ore
4th	1st	Define slope stability.
	2nd	Factors affecting slope stability.
	3rd	Types of slope failure. Causes and prevention of slope failure.
	4th	Define explosive, state constituents of explosives.
5th	1st	Properties & characteristics of explosives.
	2nd	INTERNAL-I
	3rd	Classify explosives, state composition and uses of explosives.
	4th	Explain PMS and SMS.
6th	1st	Define permitted explosive. Explain sheathed, equivalent sheathed
	2nd	Ultra safe explosive. State properties of permitted explosives.
	3rd	State composition & constructional features of safety fuse, detonating fuse.
	4th	State composition & constructional features of detonating relay, igniter cord.
7th	1st	State composition & constructional features of nonel and raydet.
	2nd	Describe different types of detonators.
	3rd	Uses & advantages of delay detonators.
	4th	State different types of exploder. Its construction and safety features,
8th	1st	State different types of exploder. Its construction and safety features,
	2nd	Circuit tester. Describe stemming rod, crack detector knife, crimper.
	3rd	Circuit tester. Describe stemming rod, crack detector knife, crimper.
	4th	Explain different principles and methods of exploratory drilling in surface mining.
9th	1st	Explain different principles and methods of exploratory drilling in surface mining.
	2nd	State different types of drill used in Opencast mining.
	3rd	Describe simple constructional features of churn drill.

	4th	CLASS TEST
10th	1st	Describe simple constructional features of drills master.
	2nd	Describe simple constructional features of wagon drill.
	3rd	Describe simple constructional features of jack hammer.
	4th	Describe simple constructional features of jack hammer.
11th	1st	State D.T.H..
	2nd	Describe different types of drill bits in drilling
	3rd	Describe preparation of charge.
	4th	State procedure of firing shots. Direct and inverse initiation.
12th	1st	Direct and inverse initiation. Stemming materials.
	2nd	Water ampoules, cushion firing.
	3rd	Define blasting efficiency.
	4th	State and describe plaster shooting and pop shooting, toe blasting.
13th	1st	State and describe pre-splitting & cushion blasting,
	2nd	State and describe muffle blasting & coyote hole blasting,
	3rd	State and describe chambered hole blasting & directional blasting.
	4th	State and describe Electronics Blasting System (EBS) .
14th	1st	Describe layout and arrangement of different types of magazines
	2nd	Describe layout and arrangement of different types of magazines
	3rd	INTERNAL-II
	4th	REVISION/DOUBT CLEARING CLASS
15th	1st	REVISION/DOUBT CLEARING CLASS
	2nd	REVISION/DOUBT CLEARING CLASS
	3rd	REVISION/DOUBT CLEARING CLASS
	4th	REVISION/DOUBT CLEARING CLASS

Learning Resources:

Sl. No.	Title of the Book	Name of Authors
1	Surface Mining Technology	S.K. DAS
2	Blasting Manuals	Sandhu & Pradhan
3	Blasting Practices in Mines	S.K. DAS
4	EMT VOL I	D.J. DESHMUKH
5	Surface Mining	G.B. Mishra
6	SME Handbook	

Dr. Subrata Das
Signature of Faculty