

GOVERNMENT POLYTECHNIC, DEBAGADA

Discipline: MINING	Semester: 3rd	Name of the Teaching faculty: Rajiv Lochan Bal, Sr. Lect. Mining
SUBJECT: Surface Mining Technology	No of Days/Week class alloted: 3	Semester from Date: 01/07/26 To Date: 15/11/26 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	Define Mine, Mining, Mineral, Ore, Tenor & Mining Engineering. Classify Surface Mining.
	3rd	State factors affecting choice of Open casting Mining method. Define stripping ratio & classify various stripping ratio.
2nd	1st	Define stripping ratio & classify various stripping ratio.
	2nd	Define quarriable limit. State favourable conditions for mechanized Opencast Mines.
	3rd	State advantages & disadvantages of Surface Mining.
3rd	1st	Define Box cut & its type.
	2nd	Determine the location of Box cut.
	3rd	Objective of benching in opencast mining.
4th	1st	Factors affecting height,width of bench.
	2nd	Define slope stability. Factors affecting slope stability.
	3rd	Types of slope failure. Causes and prevention of slope failure.
5th	1st	CLASS TEST
	2nd	Define explosive, state constituents of explosives. Properties & characteristics of explosives.
	3rd	Classify explosives, state composition and uses of explosives.
6th	1st	Explain PMS and SMS.
	2nd	Define permitted explosive & Classify permitted explosive. Explain sheathed, equivalent sheathed explosive
	3rd	Ultra safe explosive. State properties of permitted explosives.
7th	1st	State composition & constructional features of safety fuse, detonating fuse. detonating relay, igniter cord.
	2nd	State composition & constructional features of nonel and raydet.
	3rd	Describe different types,uses & advantages of detonators.
8th	1st	State different types of exploder. Its construction and safety features.
	2nd	State different types of exploder. Its construction and safety features.
	3rd	Describe Circuit tester, stemming rod, crack detector knife, crimper.
9th	1st	INTERNAL 1
	2nd	Different types of drilling used in surface mining.

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

COURSE OUTCOMES: At the end of the course, the student will be able to:

Explain the concepts of choice of Opencast Mining.

Define bench parameters and slope stability.

Describe various compositions, properties of Explosives and Blasting accessories.

Explain different drilling methods and blasting practices in Mines.

Describe blasting techniques as per statutory provisions and safety provisions of magazine.

Rajiv Lochan Roy
Signature of Faculty