JHARKHAND Rai University
RANCHI

End Semester/Reappear (Semester V) Examination December, 2024

Programme:B.Tech (MiE)
Course:Surface Mining **Full Marks: 70**
Course Code: 8PCCMiE302 **Time: 3 Hrs.**
Enrolment no. _____

Q.No.	Questions	CO	Bloom Taxonomy	Marks
	Section I			
1	**Short Answer type questions.**			**4 x 5 = 20**
a	Contrast stripping ratio & break even stripping ratio. The sale value of an ore from an open pit mine is Rs.6000 per tone cost of mining, excluding stripping cost, is Rs.2250 per tone. If the cost of stripping is Rs.1000 per meter cube the breakeven stripping ratio in meter cube/tone is	CO1	Evaluate	
	or			
	In a mine deploying shovel and dumper, the distance from the crest of the bench to the center of the dumper including safety berm and clearance is 7.5m, the dumping radius and the cutting raddi of the shovel are 15 m and 12 m respectively. the width of the working bench of the mine in m is……..	CO1	Evaluate	
b	Classify the excavating equipment of opencast mining method.	CO2	Understand	
	or			
	Short note on the following: i.Bucket fill factor ii. Cutting height	CO2	Remember	
c	Write down the applicability condition of Bucket wheel excavator.	CO3	Understand	
	or			
	Write a brief note on Berm and parapet wall.	CO3	Understand	
d	Enlist the factors affecting selection of Transport System.	CO4	Understand	
	or			
	Illustrate high angle belt conveyor system of transporting.	CO4	Understand	
	Section II			
Long Answer type questions.				**3 x 10 = 30**
2	For an open pit mining the value of metal is Rs.210/Kg, and recoverable grade is 1.2%. Production cost per tonne of ore inclusive of mining and processing but excluding stripping is Rs.2000. If the break-even stripping ratio is 3.49 meter cube/tonne.	CO1	Evaluate	
	or			
	Define box cut with diagrams.Classify the types of box cut. Enlist the factors on which site of box cut depends.	CO1	Understand	
3	In a mine for one shovel six truck are assigned. The shovel loading time per truck in 5 min , and truck cycle time 20min. Calculate the match factor.	CO2	Evaluate	
	or			
	A dragline is required to remove 3,00,000 meter cube of rock per month on the bank volume basis. Consider the following data for the dragline operation. Effective working hours per month = 450 Bucket fill factor = 0.8 Cycle time = 65 sec Swell factor of the rock = 1.25 The minimum bucket capacity of the dragline in meter cube is…	CO2	Evaluate	

4	Discuss about the bucket wheel excavator with its schematic line diagram.	CO3	Understand	
	or			
	Discuss the applicability condition required for using Surface miner and its parts.	CO3	Understand	
Section III				
	Application based questions			
5	If you are supposed to decide the method of mining, plan and discuss the various factors affecting selection of opencast mining method. What are the advantages and disadvantages of opencast mining?	CO1	Analyze	**1 x 20 = 20**
	or			
	If you have planned to start opencast mines discuss the production process required in surface mining. Illustrate the five processes in detail with equipment required in that production process.	CO1	Apply	

Course Outcome:

On the completion of the Course, the students will be able to:

CO1: Understand the basic concept of surface mining for understanding the applicability &slope stability problem in any opencast mine.

CO2: Understand the application and operation of shovel, dragline, dozer and other opencast machinery.

CO3: Understand the application, operation and limitation of bucket wheel excavator and surface transport system.

CO4: Explain the applicability of the different in-pit crushing and conveying methods& interpretation of slope stability.