JHARKHAND Rai University
RANCHI

End Semester/Reappear (Semester VI) Examination May 2025

Programme: B. Tech (MiE)
Course: Advanced Underground Mining **Full Marks: 70**
Course Code:8PCCMiE309 **Time: 3 Hrs.**
Enrolment no. _____

Q.No.	Questions	CO	Bloom Taxonomy Category	Marks
	Section I			
1	**Short Answer type questions.**			**4 x 5 = 20**
a	Discuss applicability condition of Blast Gallery method with sketch.	CO1	Understand	
	or			
	Classify the thick seam mining method in details.	CO1	Remember	
b	Describe the characteristics of different types of nozzles in hydraulic mining.	CO2	Understand	
	or			
	Explain the hydraulic mining in details.	CO2	Understand	
c	Discuss about drilling method for establishing linkage between injection & production hole.	CO3	Understand	
	or			
	Explain the concept of underground gasification of coal.	CO3	Understand	
d	Discuss in short about bucket dredging.	CO4	Remember	
	or			
	What is Bio leaching method? And what are the problems associated with it?	CO4	Understand	
	Section II			
	Long Answer type questions.			**3 x 10 = 30**
2	Describe diagonal slicing method in details with its advantages.	CO1	Understand	
	or			
	Describe the sub- leveling caving method of thick seam with the help of diagram.	CO1	Understand	
3	Explain the advantages and disadvantages of hydraulic mining.	CO2	Understand	
	or			
	Discuss the two operations of hydraulic mining.	CO2	Understand	
4	Discuss about the high wall mining used in India where deposit is available after greater depth of overburden with applicability, advantages & disadvantages.	CO4	Understand	
	or			
	Reenact the various problems associated when we go for deep mining of coal.	CO4	Apply	
	Section III			
	Application based questions			**1 x 20 = 20**
5	Explain the working principles of Underground Coal Gasification (UCG), detailing its core operational processes. Analyze the environmental and geological factors that determine its feasibility. Furthermore, critically assess the benefits and drawbacks of adopting UCG as an energy extraction method.	CO3	Apply	
	or			
	How can effective connectivity between injection and production wells be established in Underground Coal Gasification (UCG) when initial borehole linkage is inadequate? Develop the techniques and strategies used to create a stable pathway for gas flow.	CO3	Analyze	

COURSE OUTCOME

CO1 Define & explain the underground mining of thick seam & hydraulic mining.
CO2 Describe the working of hydraulic mining.
CO3 Analyze the design of coal gasification techniques.
CO4 Design & solve the deep mining method & special mining methods.