


Branch: DRILLING ENGINEERING				Faculty:- Tapas Sutar				
Subject: Blast hole Drilling/TH-01		No of periods: 4hrs/week		Total Period: 60 week: 15		Total End Sem exam: 80 Internal assesment: 20		
Scheduled Session: SUMMER-2022								
Week	Period	Topics					Remarks	
		1.0. Introduction, Scope and Purpose of Drilling						
1st	1st	1.1	Introduce blast hole drilling					
		1.2	State the opportunity of blast hole drilling in view of economic policy of the nation					
	2nd	1.3	State the economic opportunity to drill a hole to ascertain the core of the strata.					
		1.4	Explain the limits of action of drilling					
	3rd	1.5	Give a concept on the prospects of employment of drilling personnel in the field of drilling.					
		1.6	Explain how the prosperity of nation depends upon drilling					
	4th	1.7	Explain the scope of drilling in the national and international level					
2nd	1st	1.8	State the basic mechanism of rock breaking.					
	2nd		1.8.1 Rotary percussive method					
			1.8.2 Rotary drilling and cutting tools used					
			1.8.3 Percussive drilling and cutting tools used					
			1.8.4 Rotary percussive drilling and cutting tools used.					
		2.0. Blast Hole Drilling by Rock Drills						
3rd	4th	2.1	Define rock drills					
		2.2	Classify rock drills & State the field of application of rock drills.					
	1st	2.3	Explain with sketches the working principles of jack hammer and drifter					
		2.4	State the different parts of jack hammer and drifter drill.					
	2nd	2.5	State the function of Ratchet and pawl mechanism, rifle bar, rifle bar nut, shank of piston, drill chunk, throttle valve					
		2.6	Explain the lubricating system of jack hammer & drifter					
	3rd	2.7	State the field of application of air leg drill.					
		2.8	Explain the working principles of air leg drill.					
	4th	2.9	Explain field of application of wagon drill					
		2.10	Give a general description wagon drill					
4th	1st	2.11	State the field of application of churn drill.					
	2nd		2.11.1 State the type of churn drill.					
			2.11.2 Draw a sketch of a walking beam type of churn drill and label the different units of churn drill and components of drill string and explain their functions.					
			2.11.3 Explain the drilling procedure of above					
	3rd	2.12	Give a concept of support and feeding arrangements of different class of rock drills					
5th	4th	2.13	State the different types of mounting such as crawler, truck & trailer mounted etc.					
	1st	2.14	State the field of application of electrically driven drills.					
			2.14.1 Explain the working principles of electrically operated blast hole drills.					
	2nd	2.15	State the steps to be taken to minimize noise of hammer drills					
	3rd	2.16	State the field of application of down the hole drills					
6th	3rd		2.16.1 Explain with line diagram the different units of down the hole drill and state their function.					
			2.16.2 Clarify down the hole drill (DHD) and down the hole hammer (DTH)					
			2.16.3. Explain the effect of gauge wear and recommended the condition of bit to regrind.					
	1st		2.16.4 Explain systematically the drilling procedure of a down the hole drill.					
	2nd		2.17 Define drill steels					
	3rd		2.17.1 State the different sizes of drill steels					
			2.17.2 State the different designs of drill steels.					
4th		2.17.3 Compare and contrast the merits and demerits of integral steels and detachable steels and bits.						
	1st		2.17.4 State the composition of a good drill steel					

7th	2nd	2.17.5 Explain with sketches the field of application of different drill steels and			
	3rd	2.17.6 Describe the process of forging hardening of drill steels.			
	3.0. Rotary Blast Hole Drilling				
8th	4th	3.1	State the field of application of Auger drills		
			3.1.1 State the different types of augers used in drills specifying their suitability for ground condition		
	1st		3.1.2 Explain with sketches the different units of an auger drill.		
	2nd	3.2	Explain the procedure of auger drilling for the purpose of blast hole		
			3.2.1 Explain the common problems encountered during drilling and suggest the remedies.		
	3rd	3.3	State the field of application of air, water or mud flushed rotary drills with drag bits		
			3.3.1 Illustrate the above drill and label the different units and their function.		
	4th	3.4	State the field of application of rotary drills with roller bits using air water or mud as flushing medium.		
			3.4.1 Discuss the merits and demerits of above flushing system.		
	9th	1st	3.5	Define drilling patterns.	
			3.5.1 State the factor to be considered while choosing the drilling patterns		
2nd			3.5.1.1 Define Primer, Easer and Trimmer		
			3.5.1.2 State the drilling patterns.		
3rd			3.5.1.3 Explain different drilling pattern with sketch.		
4th		3.6	Define the term Incline, Drift, Stope, Raise.		
		3.6.1. Explain with sketches the blast hole patterns for development of mines for Incline, Drift, Slopes, Raise			
4.0. Fire Jet Drilling					
10th	1st	4.1	Enumerate spallable rocks		
	2nd	4.2	Specify the main operating characteristics of fire jet drill.		
	3rd	4.3	Explain the configuration of fire jet drill		
	4th	4.4	Explain the procedure and working principles of fire jet drilling.		
5.0. Rock Mechanics					
11th	1st	5.1	Define rock mechanics		
		5.2	State and explain the physical properties of rock/minerals.		
	2nd	5.3	State the mechanical properties of rock/minerals.		
	3rd	5.4	Define rock drill ability.		
	4th	5.4	Give a concept of rock drill ability.		

  
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