

Prince of Songkla University Faculty of Engineering

Final Examination : Semester I

Date: 11 October 2007

Subject: 220-624 Rock Mechanics

Academic Year: 2007

Time: 09.00-12.00 p.m.

Room: R 200

Instructions

1. Do all questions (4 pages) and answer them in the given papers and 10 rear papers allowed.

- 2. Allowed all books or notes and a calculator programming capability
- 3. Write your name in answer page including graphs and returned <u>all papers</u> to controllers.
- 4. Total points are 60 or 25 % of course.

"ทุจริตในการสอบ โทษขั้นต่ำปรับตกในรายวิชานั้น และพักการเรียน 1 ภาคการศึกษา สูงสุน ให้ออก"

No. Problem	Full Points	Assigned Points
1	30	
2	30	
Total Sores	60	

Name	. Surname	ID

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Danupon Tonn iyopas
Instructor
29 Sept 2007

Name Surname	ID				
1. A 10.7 m diameter highway tunnel is driven in fair quality gneiss at a depth of 122 n bel surface. The following data are required to calculate the strength, deformation and requising support lines for the rock mass surrounding the tunnel: (30 points)					
Uniaxial compressive strength of intact rock	$\sigma_c = 69 \text{ MPa}$				
Material constants for original rock mass	m = 0.5				
	s = 0.001				
Modulus of elasticity of rock mass	E = 1380 MPa				
Poisson's ratio of rock mass	v = 0.2				
Material constants of intact rock (broken rock)	$m_r = 0.1$				
	$s_r = 0$				
Unit weight of intact rock (broken rock)	$\gamma_r = 0.02 \text{ MN/m}^3$				
In situ stress magnitude	$p_0 = 3.31 \text{ MPa}$				
Tunnel radius	$r_0 = 5.33 \text{ m}$				
Shear strength of rock mass	$\phi = 40^{\circ}$ $c' = 0.05 \text{ MPa}$				
	c' = 0.05 MPa				

Na	ame	Surname			
2.	To plan of bench blasting limestone is given below				
	Hole inclination	1450 kg/m^3			
	Find all parameters for bla	sting of this bench.			
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