

TA3060 Mining Engineering
Re- Exam, January 26th, 2011
Open Pit Section – Time 1.5 hours
This is an open book exam

Students may answer any three of the following five questions. All questions are of equal value

- ✓ 1. (A). An open pit mine is utilizing a 15-meter bench height. A drill has a penetration rate of 4.6 minutes per meter, takes 8 minutes to relocate between holes, and operates for 7.5 hours out of every shift. The burden is 5 meters, the spacing is 6 metres and there is 1.5 metres of sub-grade drilling. How much ore is drilled in each shift if the S.G of the material is 3.8?
(B) What is the powder factor of the blast if the holes are 16.5 cm in diameter, are loaded with ANFO at a density of .85 grams per cc and the collar (stemmed) height is 4.0 metres?
2. Discuss briefly 5 important factors you would consider in designing a truck shovel loading system for a high tonnage open pit operation.
3. A. Discuss the basic differences between open pit metal mining and quarrying operations for both aggregates and high quality dimension stone.
B. Describe briefly the three basic surface coal mining techniques and how the equipment productivity is critical in each.
4. Describe the process of producing an open pit design and include in your discussion:
 - What are the economic parameters described by the ultimate pit design
 - What needs to be done to make the ultimate design a workable pit and
 - The economic importance of optimizing the design through the establishment and scheduling the intermediate pit phases.
5. Provide a short definition and some discussion on five of the following items:
 - A. The legislative requirements of safety berms in open pit geometry
 - B. The limitations on bench heights in an open pit
 - C. How you define the optimum bailing velocity
 - D. What is meant by productive capacity vs productivity
 - E. What is rimpull capacity
 - F. Describe the difference between compliance monitoring and effects monitoring and the importance of each