



UNIVERSITY OF MINES AND TECHNOLOGY, TARKWA

SECOND SEMESTER EXAMINATIONS, MAY 2018

COURSE NO: MN 374
COURSE NAME: SURFACE MINING SYSTEMS
CLASS: MN III **TIME:** 3 HOURS

Name: _____ Index Number: _____

ANSWER FOUR QUESTIONS ONLY
ALL QUESTIONS CARRY EQUAL MARKS

1

- a. Distinguish between open cast mining on one hand and quarrying (dimension stone) on the other hand in terms of types of mineral mined, the physical configuration, sequence of development and the equipment involved. [10]
- b. Mention four advantages and two disadvantages of surface mining. [6]
- c. What is glory hole? Discuss three cases, with suitable sketches, in which glory holing is applicable. [9]

2

- a. Make a sketch showing overall pit slope. Mention six factors affecting the overall pit slope and discuss two of them. [12]
- b. Fig. 1 is a vertical section showing gold ore grades (g/t) of a gold deposit. Each square block is 10m×10m and the break even cutoff grade is 1 g/t.

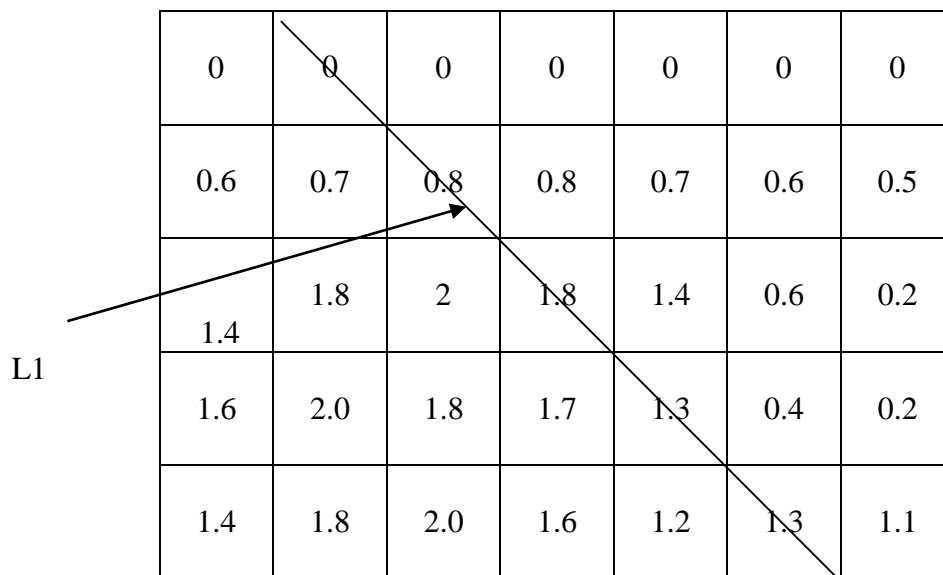


Fig. 1

The line L1 is the first guess of the location of the 45° ultimate pit on the left hand side using the manual method. Determine whether this line coincides with the ultimate pit limit on the left hand side using the stripping ratio grade curve in Fig. 2. If not, should the ultimate pit limit be moved to the right or left of line L1? [8]

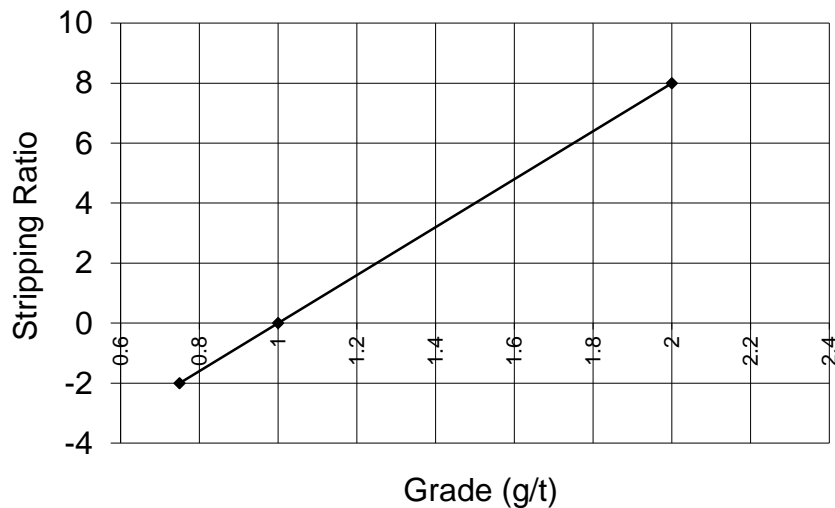


Fig. 2

- c. Explain the terms breakeven stripping ratio and instantaneous stripping ratio. [5]
- 3
- a. Mention the following applications of percussive drilling in surface mining: [4]
- i Types of mounting
 - ii Hole diameter ranges
 - iii Rock types.
 - iv Drill types
- b. Discuss rotary drill bits including the types and areas of application [9]
- c. Mention six factors affecting bench drilling and discuss three of them. [12]
- 4
- a. Discuss the following two surface blast design parameters. [12]
- Stemming
 - Sub-drilling
- b. Mention three advantages and four disadvantages of inclined blast holes in surface mining [7]
- c. Mention three control blasting methods and discuss one of them [6]
- 5
- a. Sketch a cross sectional representation of a simplified road pavement structure. Briefly discuss three of the layers involved. [12]
- b. With reference to Fig. 3 identify the waste dump configurations labeled A, B, C, D and E. [5]
- c. Mention four factors affecting the stability of waste dumps and discuss two of them. [8]
- 6
- a. Explain the term reclamation and mention the importance. [6]
- b. Discuss three natural factors that are important with respect to the information needs for pre-mining reclamation planning and post-mining land use. [9]
- c. Mention three objectives of re-vegetation. [6]
- d. Explain two primary factors affecting the selection of plant species for re-vegetation. [4]