



PROGRAM : BTech
MINING ENGINEERING

SUBJECT : MINING IVA

CODE : MINA411 Supplement Exam

DATE : July 16, 2014

DURATION and TIME : 8:00 – 11:00

WEIGHT : 70:30

TOTAL MARKS : 100

EXAMINER : Dr. Steven Rupprecht & Dr. Andre Dougall

MODERATOR : Mr. H Hoffman

NUMBER OF PAGES : 4

INSTRUCTIONS

1. READ ALL QUESTIONS CAREFULLY AND ANSWER ALL THE QUESTIONS.
2. COMPLETE SECTIONS A AND B IN SEPARATE EXAMINATION SCRIPTS.

REQUIREMENTS : TWO EXAMINATION SCRIPTS PER STUDENT.

SECTION A

METALLIFEROUS MINING

QUESTION 1

Describe and sketch how you would construct a typical surface haul road i.e. pavement cross section. (5pts)

What size berm would you propose if your truck wheel has a diameter of 4m. What width of road would you propose for 2-way track on a straight and a curve for a truck 6.1m wide. What crossfall gradient would you propose for a well drained, compacted, constructed and maintained haul road. What rolling resistance would you use if truck tires penetrates 25mm into the road way. (5pts)

Describe the steps for road maintenance when major repairs are required to a section of the haul road. Also what maintenance steps are required for soft spots in the haul road. (5pts)

(15)

QUESTION 2

Describe how you would implement shrinkage stoping in a South African Gold Mine with a 2.0m wide orebody dipping at 75 degrees. Describe the development layout and mining layout by use of plan and sectional drawings. Describe how one would establish the mining stoping face and manage the load and hauling of the broken rock.

(20)

QUESTION 3

You have a 30m long panel with a stoping width of 1.35m and an advance of 0.95m with every blast. The panel's grade is estimated at 9.95g/t. The density of the stope face is 2.78t/m³. If the miner now opens the face by mining (at a face advance of 0.95m) an additional 20cm of footwall what will be the new stope grade based on the introduction of the additional footwall waste. The density of the footwall is 2.53t/m³ and carries a grade of 0.6g/t.

(15)

QUESTION 4

You a Mine Overseer in charge of a stoping section. Your shiftboss reports that the stope orepass is hanging up due to large rocks being tipped into the stope orepass and that the blockage is 10m from the boxfront. What instructions do you give to bring down the blockage. (5pts)

What instructions will you give to ensure that blockages will not re-occur. (5pts)

(10)

QUESTION 5

Sketch and describe a typical shaft rockpass system as proposed by Hagan and Archeampong (1999)

(10pts)

(10)

SUB-TOTAL SECTION A = 70

SECTION B: TO BE DONE IN SEPARATE SCRIPT

QUESTION 1

Annandale described hydrology features and gives various definitions. List and define some of the concepts referred to. Dougall (2010) Chapter 4.

(30)

OR

Give an analysis of different pillar and partial pillar extraction methods use at least 4 examples. Dougall (2010) Chapter 7

(30)

SUB-TOTAL SECTION B = 30

TOTAL = 100

INFORMATION SHEET (IF APPLICABLE)

