



PROGRAM : BTech
MINING ENGINEERING

SUBJECT : MINING PROJECTS 4
EXAMINATION

CODE : MPT42 - 1

DATE : October 31, 2015

DURATION and TIME : 3 HOURS 8:30 – 11:30

WEIGHT : 25:75

TOTAL MARKS : 100

EXAMINER : Dr. Steven Rupprecht & Dr. Andre Dougall

MODERATOR : Mr H Hoffman

NUMBER OF PAGES : 5

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

QUESTION 1

Develop a network Diagram and bar chart with appropriate table for a mine training centre, which requires the building of a lecture complex and underground training stope. Constraints; the complex needs to be built in 3 months and the stopes prepared in 2 months. The lecture complex requires painting and services.

(25)

SUB-TOTAL SECTION A = 25

SECTION B: TO BE DONE IN SEPARATE SCRIPT

QUESTION 1

You have an incline shaft that must be developed to a vertical depth of 40mbs to level 1 and 80mbs to level 2, and 85mbs for shaft bottom. The incline shaft is developed at an inclination of 35 degrees. When will the shaft be ready – in days - for hand over to the mine's development team if the capital development advances at a rate of 2m per day regardless of the number ends available (only 2m can be developed in a single day) and before proceeding down wards in the incline shaft 10m of development must be conducted on both side of the level (i.e. east & west breakaways developed for level 1 and level 2.

Provide your answer for

- (a) Reaching level 1
- (b) Completing the development on level 1
- (c) Reaching level 2
- (d) Completing the development on level 2
- (e) Completing shaft bottom

(25 pts)

QUESTION 2

Provide a detailed Table of Contents for a Scoping Study or Prefeasibility Study

(10 pts)

QUESTION 3

If a gold operation is producing 1200 tpm at a cost of R1400/t what will be the new operating cost if the production rate is increased to 3400tpm using the 6th 10th Rule

(10 pts)

QUESTION 4

Based on the following provide the Revenue, Operating Costs, Profit before Tax, discounted cashflow NPV and IRR based on a discount rate of 10%. 31.103g to the oz.

(20 pts)

Year	0	1	2	3
ROM tones (t)		900 000	1 000 000	1 200 000
Grade (g/t)		5,8	6,2	4,6
Milled Tonnage		900 000	1 000 000	1 200 000
Mill grade		5,8	6,2	4,6
Plant Recovery		91%	90%	89%
Gold Recovered				
Gold price (US\$/oz)	1150	1150	1250	1300
Exchange rate (R/US\$)	12,5	12,5	12,5	12,5
REVENUE				
General and Admin R/t mined	13	13	13	13
Mining cost (R/t mined)	950	950	950	950
Plant Costs (R/t milled)	97	97	97	97
OPEX				
CAPEX	-350 000 000	0	0	0
Profit Before Tax		-	-	-
Discount Rate	1			
Discounted Cashflow	-	-	-	-
NPV				
IRR				

QUESTION 5

Based on the above information what will be the Cut-off grade for this Project?

(10 pts)

SUB-TOTAL SECTION B = 75

TOTAL = 100

INFORMATION SHEET (IF APPLICABLE)