

PROGRAM : NATIONAL DIPLOMA
EXTRACTION METALLURGY

SUBJECT : Extraction Metallurgy
CODE : Met 111

DATE : SUMMER EXAMINATION
02 June 2018

DURATION : (SESSION 2) 12:30 - 15:30

WEIGHT : 40: 60

TOTAL MARKS : 80

EXAMINER : MS SENZENI LEPUTHING

MODERATOR : MS M.S. MADIBA

NUMBER OF PAGES : 3 PAGES

INSTRUCTIONS : ANSWER ALL QUESTIONS.
CALCULATORS PERMITTED (ONE PER
STUDENT).

REQUIREMENTS : 2 SCRIPTS PER STUDENT

INSTRUCTIONS : Answer all questions

Question 1**[12]**

Define the following mineral processing terms

- 1.1. Extraction metallurgy (2)
- 1.2. Classification (2)
- 1.3. Mineral (2)
- 1.4. Mineral liberation and sketch (4)
- 1.5. Recovery (2)

Question 2**[30]**

Comminution is size reduction of the ore particles to produce clean valuable mineral particles and clean gangue particles. In mineral processing there are different processes that are involved and one of them is crushing.

- 2.1. Explain the operating mechanism of roll crusher? (7)
- 2.2. State and explain the three mechanism of breakage that reduce the particle size in a mill (3)
- 2.4. Draw and briefly explain the motion of charge in a cylindrical tumbling mill (20)

Question 3**[28]**

- 3.1. State and explain the important magnetic properties of minerals which are used as advantages for magnetic separation. Give an example of mineral for each property and which units are used to separate these minerals from gangue (12)
- 3.2 Give the differences between free settling and hindered settling (6)

3.3 Define froth flotation. State and explain the reagents used in froth flotation
(10)

Question 4

[10]

4.1. A plant treats 250 t of copper ore in a day shift of metal grade of 25 % of Cu. 160 t is disposed at a grade of 1 % of Cu. Calculate the % recovery and the grade of Cu.