UNIVERSITY OF MINES AND TECHNOLOGY, TARKWA

FIRST SEMESTER EXAMINATIONS, NOV/DEC 2018

COURSE NO: MR 375
COURSE NAME: BENEFICIATION OF INDUSTRIAL MINERALS
CLASS: MR III **TIME**: 3 HOURS

Name**:** _____Index Number: _____

Answer Questions 1 and 2 and One other Question

Question 1 (***50 marks***)

a) Select one of the following industrial minerals found in Ghana: Silica Sand, Mica, Limestone, Construction Aggregates, Ilmenite or Rutile.
b) Where in Ghana can this mineral be found?
c) Draw a flow-sheet of apparatus for the beneficiation of the mineral selected from Q1(a).
d) Deduce five (5) negative environmental effects associated with the beneficiation process
e) Suggest how the negative effects stated in Q1 (d) could be addressed.

Question 2 **(*25 marks*)**

A diamond processing plant receives 200 tonnes of ore per hour. The ore is estimated to contain 5% diamond and requires 300 ml of a dense liquid for Dense Medium Separation (DMS). The DMS yields 20% concentrate with enrichment ratio of 5.

a) Draw a schematic flow-sheet of the DMS process.
b) Calculate the grade of diamonds in the concentrate.
c) Calculate the recovery of diamonds into the concentrate.
d) How much dense liquid is required per hour.

Question 3 **(*25 marks*)**

a) Identify and state three (3) disadvantages associated with the traditional method of salt winning.

b) With the aid of a process flowsheet describe a technique for common salt production, which ensures improved quality.

Question 4 ***(25 marks)***

a) With the aid of a flow-sheet describe the wet method of beneficiation of kaolin.
b) State three (3) main environmental problems associated with Kaolin beneficiation.
c) Describe how the problems identified in (b) can be addressed.

GOOD LUCK

Examiners: Prof W K Buah