UNIVERSITY OF MINES AND TECHNOLOGY, TARKWA

DEPARTMENT OF MINING ENGINEERING

FIRST SEMESTER EXAMINATIONS, NOV/DEC 2018

COURSE NO: MN 377

COURSE NAME: UNDERGROUND MINE DEVELOPMENT

CLASS: BSc III

TIME ALLOWED: 3HRS

INSTRUCTIONS: ANSWER ANY FOUR QUESTIONS

1. (a) Explain what you understand by Underground Mine Development. Illustrate this with the aid of well labelled diagrams and with reference to Golden Star Underground Mine, Wassa Akyempim, Ghana.

   (b) Describe different ways through which underground ore can be economically assessed.

   (c) With the aid of well labelled diagrams, discuss the blasting procedures at Golden Star Underground Mine, Wassa Akyempim, Ghana. (25 marks).

2. (a) Draw an Underground Mine Layout showing various methods of Entry and Operations

   (b) What are the factors that influence the choice of location or position of mine entry?

   (c) Discuss the different type of Mine Openings and Compare Vertical and Inclined Shafts (25 marks)

3. (a) Enumerate the different type of Shaft support systems.

   (b) What are the advantages of Concrete lined Shaft?

   (c) Establish the principles and procedures of shaft sinking through freezing methods.

   (d) List the other shaft sinking methods. (25 marks)

4. (a) Discuss in detail the four Mechanical Methods of Raising a Shaft

   (b) Discuss the different Components of Rotary Drilling Equipment. (25marks)

5. Write on the following as regards shaft sinking or tunnelling works:

   (a) Ore and Waste Bin;

   (b) Ventilation;

   c) Mucking;

   (d) Drilling and drilling Pattern; and

   (e) Reaming or Scaling. (25 marks)

6. (a) You have been invited to give a lecture at a seminar on “Underground Deepening Development Using Non-Explosives”. Write your presentation.

(b) Discuss Ground and Wall Support Systems in Tunnelling and Shaft Sinking operations (25 marks)