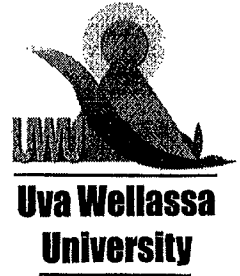


Uva Wellassa University, Sri Lanka

End Semester Examination – September/October 2012

MRT 435-2 - Mining Methods

Duration: Two (2) hours



Total five (5) questions

Answer four (4) questions, including question 1

Illustrate your answers with sketch diagrams where necessary

**1. Compulsory Question**

- a) Briefly explain Hydrauliclicking. (17 marks)
- b) What is understood by “Integrated Mechanization of Opencast Mining”? (16 marks)
- c) What factors determine the bench width in an opencast mine? Explain with a suitable illustration. (16 marks)
- d) In the application of the method Square Set Stopping, the support system is well capable of taking up the rock pressure developed in the course of stopping in the X-Y-Z directions as compressive stresses. Explain. (17 marks)
- e) Explain how good wall support is possible in the application of the Vertical Crater Retreat mining method. (17 marks)
- f) “High level of mechanization is possible in the application of Sub-level Caving”. Explain. (17 marks)

(Total 100 marks)

**2.**

- a) What is understood by the Overall Stripping Ratio? Illustrate and explain. (20 marks)
- b) Of what significance is the cut-off-stripping ratio in open-pit mine planning? (20 marks)
- c) Having determined the final pit limits and overall stripping ratio, the mining plan can be executed in a number of ways. Illustrate and explain the three methods with their advantages and disadvantages. (60 marks)

(Total 100 marks)

3.

- a) Express a mathematical relationship for the determination of the dipper size of a mine shovel, explaining all the operational factors. (40 marks)
- b) Propose, illustrate and briefly explain suitable equipment combinations with at least two examples from each for :
  - i. The extraction of hard ore by opencast method and transport to the consumer or to the metallurgical plant
  - ii. The continuous extraction of soft or finely-blasted hard overburden and continuous transportation to expose a coal seam

(60 marks)

(Total 100 marks)

4.

- a) Explain briefly the major factors influencing the choice of an underground mining method. (40 marks)
- b) Evaluate Shrinkage Stopping, Overhand Cut-and-Fill and Undercut-and-Fill mining methods with special reference to the differences in application of the stope support method. (60 marks)

(Total 100 marks)

5.

- a) Explain "cavability", how it is determined and its significance in the application of caving methods. (30 marks)
- b) Name the three systems of the Block Caving mining method. (30 marks)
- c) Briefly explain the ore body condition requirements for the application of the method Block Caving. (40 marks)

(Total 100 marks)