

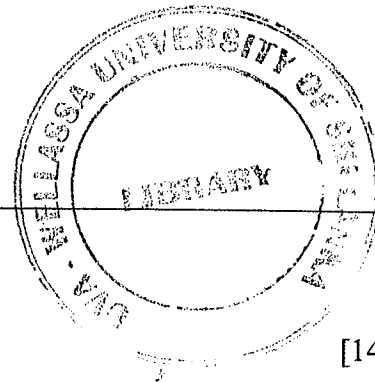
Instructions to candidates

Duration: 02 Hours

Number of questions: 05 Essay

Answer 04 Questions out of 05 Including Question 01

Mark allocation: 400 Mark



1.

- a) What do you understand by strip mining? [14 Marks]
- b) What are the three basic types of mining methods to which surface mining methods can be categorized into and what are the sub-categories? [14 Marks]
- c) Explain why individual bench slopes in a pit can be maintained at a steeper angle than the pit slope. [14 Marks]
- d) What is the significance of the Recoverable-even Stripping Ratio in open-cast mining? [14 Marks]
- e) What are the three basic principles on which a mining method is selected? Explain briefly. [14 Marks]
- f) "After determining that the size of the ore body is large enough to justify consideration for block caving, the cavability must be established". Explain. [15 Marks]
- g) With regard to the costs of preparation of the ore body for extraction by caving, what method out of the two methods, sub-level caving and block caving, incurs the higher cost? Explain why. [15 Marks]

2.

- a) What are the three main classes to which underground mining methods are divided? What is the underlying philosophy behind this classification? [30 Marks]
- b) Suggest a suitable mining method for the extraction of an ore deposit with the following conditions:

- (i) Steep-dipping wide-vein, with the foot wall inclination exceeding the angle of repose of the ore.
- (ii) Competent rock both in the hanging wall and foot wall.
- (iii) Competent ore with regular ore boundaries.

and briefly explain the stope technology with suitable illustrations.

[70 marks]

3.

a) Explain briefly the ground control techniques adopted in underground mining methods coming under the following broad categories.

- (i) Self-supported openings.
- (ii) Artificially-supported stopes.
- (iii) Caving methods.
- (iv) Long-wall mining methods.

[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 the application of the stope support method.
[60 marks]

5.

(a). What are the two types of dredges? Briefly explain their function with illustrations.
[40 marks]

(b) Why can bench slopes usually have a steeper pit slope?
[10 marks]

(c) What are the main environmental aspects related to multiple bench mining?
[30 marks]

(d) In selecting a continuous excavator, what points favorable to the Bucket Wheel Excavator should be considered?
[20 marks]