



GWANDA STATE UNIVERSITY

FACULTY OF ENGINEERING AND ENVIRONMENT

DEPARTMENT OF MINING ENGINEERING

MINING SURVEY AND GIS

EMN 2208

Examination Paper

June 2024

This examination paper consists of 2 pages

Time Allowed: 3 hours

Total Marks: 100

Examiner's Name: Mr N.S. Maphosa

INSTRUCTIONS

- 1. Choose and Answer any 4 questions**

1. Describe and explain key components that makes up an exploration model. (25 marks)
2. Discuss the various surveying equipment and instruments used in mine surveying, including their principles of operation and applications. Provide examples of specific instruments used for distance measurement, angle measurement, and spatial data capture in mining. (25 marks)
3. Compare and contrast the surveying requirements in surface and underground mining operations. Discuss the specific surveying techniques used in open-pit surveys, tunnel surveys, and stockpile surveys. Provide examples to demonstrate the application of each surveying technique in mining. (25 marks)
4. Explain the application of the Weights of Evidence approach in gold prospectivity mapping in mining surveying. (25 marks)
5. Compare and contrast Differential GPS (DGPS) and Real-Time Kinematic (RTK) surveying techniques. Explain the principles behind these methods and their advantages and limitations in mining surveying. Discuss the use of base stations, correction signals, and rover receivers in DGPS and RTK surveying. Provide an example of using DGPS or RTK for precise location measurements in a mining operation. (25 marks)