



**MASENO UNIVERSITY**  
**UNIVERSITY EXAMINATIONS 2015/2016**

**SECOND YEAR FIRST SEMESTER EXAMINATIONS FOR THE  
DEGREE OF BACHELOR OF SCIENCE IN EARTH SCIENCE  
WITH INFORMATION TECHNOLOGY**

**MAIN CAMPUS**

**NGA 202: PRINCIPLES OF MINERALOGY**

Date: 6<sup>th</sup> January, 2016

Time: 11.00 - 1.00 pm

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**INSTRUCTIONS:**

- Answer question ONE and any other TWO questions.
- Sketch maps and diagrams should be used whenever appropriate.



**NGA 202: PRINCIPLES OF MINERALOGY**

1. a) Discuss the crystal systems and their distinctions in terms of symmetry. (14 marks)
- b) Write explanatory notes on the following.
  - i) Exotic and Inherent colours in minerals (3 marks)
  - ii) Pleochroism (3 marks)
- c) Differentiate between Plane of symmetry and Center of symmetry. (4 marks)
- d) Examine the importance of optical properties in mineralogy (6 marks)
2. a) Explain the importance of relief in mineralogy (8 marks)
- b) Examine the effects of twinning in mineralogy (12marks)
3. Describe the surface properties of minerals and their economic application in ore dressing. (20 marks)
4. a) Explain the term 'polarization' and provide two examples of how light can be polarized. (12 marks)
- b) Explain the mineralogical and compositional differences in basalt and andesites. (8 marks)
5. a) Discuss the significance of mineral occurrence in a given geological environment. (12 marks)
- b) Describe the conditions necessary for a substance to form a mineral (8 marks)
6. Discuss the environments and geological controls in mineral occurrences (20 marks)