



**KISII UNIVERSITY**  
**UNIVERSITY EXAMINATIONS**

**SECOND YEAR EXAMINATION FOR THE AWARD OF**  
**THE DEGREE OF BACHELOR OF EDUCATION (SCIENCE)**  
**FIRST SEMESTER 2015/2016**  
**(JANUARY-APRIL, 2016)**

**BSMN 222: PROCESS MINERALOGY**

**STREAM: Y2S1**

**TIME: 2 HOURS**

**DAY: FRIDAY, 9.00 - 11.00 AM**

**DATE: 01/04/2016**

**INSTRUCTIONS**

- 1. Do not write anything on this question paper.*
- 2. Answer ALL questions in section A and any TWO in section B.*

a) Explain the following terminologies,

- i. Crystallography
- ii. Minerals
- iii. Ores
- iv. Polymorphs

(b) Discuss how the following properties are related to the composition and crystal structure of minerals

- i. Hardness
- ii. Cleavage
- iii. Color
- iv. Luster
- v. Density
- vi. Fracture
- vii. Streak
- viii. Crystal habit

(c) Using examples discuss six types of ores in process mineralogy

**SECTION B: ANSWER ANY TWO QUESTIONS (15 MARK EACH)**

2. (a) Using a flow diagram, illustrate the process of production of copper from low grade sulphide ore.

(b) Discuss the characteristics of the following mineral lusters

- i. Vitreous
- ii. Metallic
- iii. Resinous
- iv. Greasy

3. (a) Using atomic structure of diamond and graphite explain the existence of polymorphism

(b) With examples explain the difference between trace and minor elements

4. (a) Discuss roasting as a method of ore extraction

(b) Discuss the process of roasting and smelting with regards to galena

(c) Discuss the wet process for the extraction of Pb from low grade ore