



**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**SCHOOL OF ENGINEERING AND TECHNOLOGY**

**UNIVERSITY EXAMINATION FOR THE DEGREE IN SCIENCE IN  
CONSTRUCTION MANAGEMENT**

**1<sup>ST</sup> YEAR 2<sup>ND</sup> SEMESTER 2023/2024 ACADEMIC YEAR**

**CENTRE: MAIN CAMPUS**

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**COURSE CODE: TCB 1106**

**COURSE TITLE: PHYSICAL ENVIRONMENT**

**EXAM VENUE:**

**STREAM: BSc. CONSTRUCTION MGT**

**DATE: /04/2024**

**EXAM SESSION:**

**DURATION: 2 HOURS**

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**Instructions**

- 1. Answer ANY three questions**
- 2. Candidates are advised not to write on question paper**
- 3. Candidates must hand in their answer booklets to the invigilator while in the examination room.**

**QUESTION ONE (20 Marks)**

- a) State any FIVE environmental problems currently being faced by the world whose sources can be directly linked to construction activities. Explain the link  
(10 Marks)
- b) With the aid of a neat sketch, describe the internal structure of the earth and most probable mineral constituents  
(6 Marks)
- c) List any FOUR features you may observe during field reconnaissance of site investigation exercise  
(4 Marks)

**QUESTION TWO (20 Marks)**

- a) Describe the process of formation of the following types of rocks:  
i. Igneous  
ii. Sedimentary  
iii. Metamorphic  
(12 Marks)
- b) Comment on the suitability of rock types mentioned in (2a) as building materials.  
(8 Marks)

**QUESTION THREE (20 Marks)**

- a) Define the term mineral and explain the relevance of the study of mineralogy in construction engineering.  
(7 Marks)
- b) State any FOUR physical properties that can be used to identify different minerals.  
(8 Marks)
- c) Explain how Mohr's scale of hardness can be used to distinguish minerals in the field  
(5 Marks)

**QUESTION FOUR (20 Marks)**

- (a) Define the following terms as encountered in structural geology  
i. Outcrop  
ii. Unconformity  
iii. Dip  
iv. Strike  
v. Strata  
vi. Bedding  
(12 Marks)
- (b) State any TWO features that may confirm presence of folds in the field.  
(2 Marks)
- (c) Faults may be directly seen in the field, particularly in artificial exposures such as river cuttings, road cuttings etc. But in majority of cases, faults are recognized by stratigraphic and physiographic evidence. Discuss any THREE of such field evidence supporting existence of faults.  
(6 Marks)

**QUESTION FIVE (20 Marks)**

(a) Explain any TWO phenomena which may be of interest in geological investigation at concrete gravity dam site (5 Marks )

(b) Explain with aid of neat sketches dewatering techniques by the following techniques:

- i. Sump and ditches
- ii. Well point system
- iii. Deep well system

(15 Marks)