



KENYATTA UNIVERSITY

UNIVERSITY EXAMINATIONS 2009/2010

**FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF
SCIENCE (ENVIRONMENTAL HEALTH)**

HEH 311: GEOMEDICINE

DATE: Tuesday, 29th December, 2009

TIME: 11.00 a.m. – 1.00 p.m.

INSTRUCTIONS:

Answer **ALL** questions in Section One. In Section Two, answer question **ONE** and any other **TWO**.

SECTION ONE

1. Giving examples, define the following terms:
 - a) Medical geology (2 marks)
 - b) Geophagy (2 marks)
 - c) Minamata disease (2 marks)

2. Explain three main classifications of trace elements; give an example for each (6 marks)

3. State the physiological functions of the following trace elements
 - a) Iron
 - b) Calcium
 - c) Zinc

- d) Chromium
 - e) Copper
 - f) Molybdenum
4. Exposure to heavy metals presents a serious hazard to children commonly exposed to in our environment
- a) Give an example of a heavy metal that children are normally exposed to in our environment
 - b) List the symptoms of the exposure to this heavy metal among children
 - c) List the long-term effects of this heavy metal on children (5 marks)

SECTION TWO

1. Outline the pathways through which trace elements enter the body, noting both natural processes and human activities that alter the elements' concentrations along the way (20 marks)
2. Sketch and explain the essential features of the dose-response curve of the element fluoride. Discuss the physiological functions of the element in the human body (15 marks)
3. Discuss the applications of peat balneotherapy that have been established. What are the potential applications in Kenya with reference to peat occurrences in Cherangani Hills and the Aberdares? (15 marks)
4. 'Selenium is an intriguing element because of the environmental consequences of its double-edged behavior'. Describe the clinical manifestations resulting from varying tissue levels of the element on either side of this duplex. (15 marks)
5. Give an account of the possible superposing factors on iodine deficiency in the aetiology of goiter and cretinism in Kenya (15 marks)