INTERNATIONAL UNIVERSITY OF EAST AFRICA
'Learning to Succeed'

FACULTY OF SCIENCE AND TECHNOLOGY

END OF SEMESTER EXAMINATIONS - DECEMBER 2025

PROGRAMME: BSEM
YEAR/SEM: YEAR 1/SEMESTER 1
COURSE CODE: BSE1103
NAME: ENVIRONMENTAL STRUCTURES & GEO PROCESSES

DATE:
TIME:

INSTRUCTIONS TO CANDIDATES:

SECTION A

Answer all questions in this section (compulsory)

Question 1:

1. Identify the eight planets that make up the solar system. (4 marks)
2. State and explain the three types of plate boundary. (6 marks)
3. Why are earth rocks younger than meteorites and moon rock (6marks)
4. State and explain the general principles of relative dating. (5 marks)
5. Use diagrams to illustrate the physical distinct layers of the earth. (6 marks)
6. Explain the techniques used in absolute dating (3 marks)
7. Differentiate between physical weathering and chemical weathering. (4 Marks)
8. What is the core principle of the Elastic Rebound Theory in relation to earthquakes? (6 Marks)

Question 2:

1. Explain the Nebular Hypothesis and discuss outline key processes that led to the formation of the early Earth. (5 marks)
2. Describe how the Earth became chemically and physically differentiated into the core, mantle, and crust. (5 marks)
3. Outline the major events that occurred during the Precambrian era. (5 marks)
4. Differentiate between relative and absolute dating and give one example of each method used in geochronology. (5 marks)
5. Discuss the causes of earthquakes and explain the difference between the epicenter and focus/hypocenter. (5 marks)

6. Describe the three main types of seismic waves. (5 marks)

7. Explain the difference between intrusive and extrusive volcanic processes and give one example of a landform produced by each. (5 marks)

8. State and explain the general principles of relative dating. (5 marks)

SECTION B

Answer only three (3) questions from this section

Question 1:

a) Discuss the characteristics of the solar system. (10 marks)

b) Distinguish between terrestrial and jovian planets (10 marks)

Question 2:

a) With the aid of diagrams, illustrate the earth's interior layers. (10 marks)

b) Describe the composition of the following: (10 marks)

i) The lithosphere

ii) The core

iii) The asthenosphere

Question 3:

a) Discuss the economic and societal impacts of earthquakes? (10 marks)

b) Describe how are the size and strength of earthquake measured? (10 marks)

Question 4:

a) Explain the following hypotheses; (10 marks)

i) Why are some planets heavier than others?

ii) Why are some planets hotter than others?

b) Describe the story of planet building process using the two distinct models (10 marks)

Question 5:

The earth has gone through different geological times. Identify them with the major events that occurred in each. (20 Marks)

Question 6:

a) Describe the main types of seismic waves generated by an earthquake (10 marks)

b) How does the study of these waves contribute to our understanding of the Earth's internal structure? (10 marks)

Question 7:

Volcanism is a significant endogenetic process. Explain the different landforms that can be created by volcanic activity, providing specific examples (e.g., mountains, lakes). (20 marks)

Question 8:

a) Describe the geological rock cycle. (10marks)

b) Explain with examples how a single parent material can be transformed into igneous, sedimentary, and metamorphic rocks over geological time. (10 marks)

Question 9:

a) With the aid of a well-labeled diagram, describe the theory of Plate Tectonics. (10 marks)

b) Discuss the three main types of plate boundaries and the dominant geologic activities associated with each. (10 marks)

Question 10:

"Geomorphic processes shape the Earth's surface." Discuss this

statement by explaining the roles of RUNNING WATER and GLACIERS as geomorphic agents. For each, describe the key processes of erosion and deposition. (20 marks)

Question 11:

a) Differentiate between intrusive and extrusive igneous activity. (4 marks)
b) Describe the formation and characteristics of any two major volcanic landforms. (6 marks)
c) Explain the role of volcanic activity in shaping ecosystems and influencing climate. (10 marks)

Question 12:

a) Discuss the major stages involved in the geological evolution of the Earth. (10 marks)
b) Explain how plate tectonics has influenced the evolution of continents and ocean basins. (5 marks)
c) Discuss the relevance of understanding Earth’s geological evolution in natural resource management. (5 marks)