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**NATIONAL UNIVERSITY OF LESOTHO**  
**BSC HUMAN GEOGRAPHY EXAMINATIONS**  
**ESC 1312: ADVANCED PHYSICAL ENVIRONMENTAL SYSTEMS**

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MAY 2023

MARKS: 100

DURATION: 3 HOURS

This question paper consists of **THREE printed** pages. Please see that you have **ALL**.

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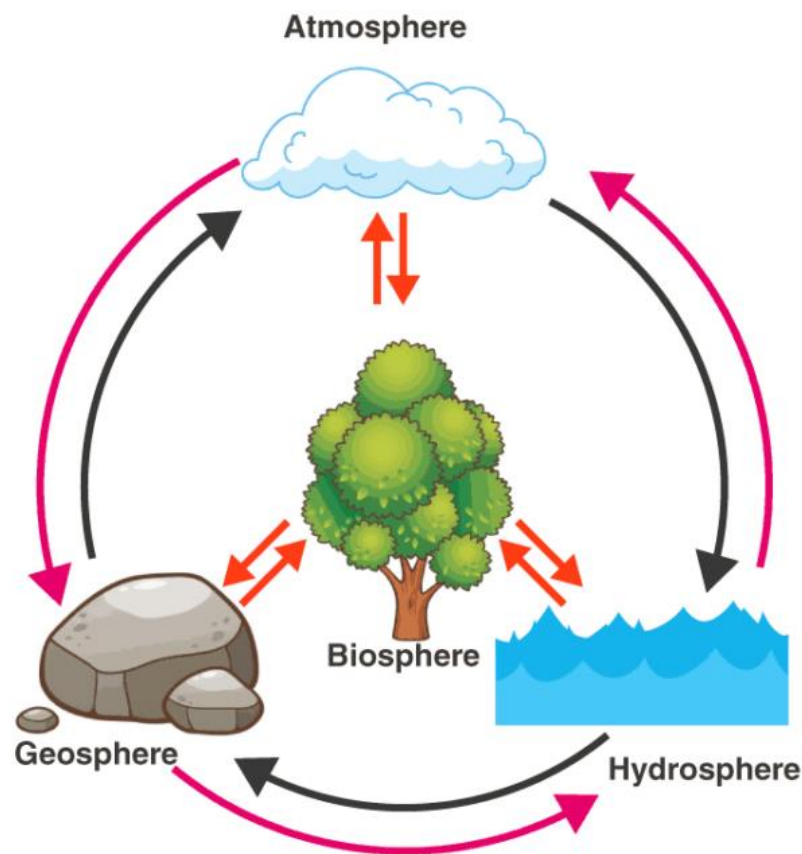
Answer **ANY FOUR** questions. Each question carries **25 marks**.

Use **CLEAR** sketches and diagrams where appropriate.

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**QUESTION 1** (25 marks)

- a) Label the following 4 main environmental spheres of the earth in the figure below, and give 3 examples of the interaction between each of the spheres as indicated by arrows in the figure. (22)



- b) How would the absence of each of the other 3 spheres impact the Biosphere? (3)

**QUESTION 2 (25 marks)**

- a) Name and define 3 forces that drive air movement, and state how each of the forces affect air movement. (9)
- b) Give two examples of local winds. (2)
- c) With the aid of diagrams, describe how the two local winds in (b) above occur. (14)

**QUESTION 3 (25 marks)**

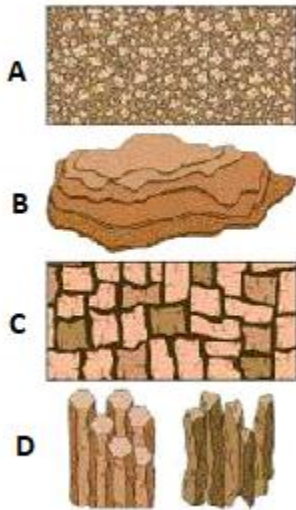
- a) Differentiate between the following terms as used in Ecology: (10)
- Biotic factors and abiotic factors
  - Ecosystem and biome
  - Aquatic ecosystem and terrestrial ecosystem
  - Competition and predation
  - Mutualism and Parasitism
- b) Name and describe any 3 types of ecosystem. In the description include characteristics, an animal found within such ecosystem and a country characterized by that ecosystem. (15)

**QUESTION 4 (25 marks)**

- a) Organize the following Levels of Organization within the Biosphere starting with the biggest to the smallest, and give a definition for each: (14)
- Biome  
Biosphere  
Community  
Ecosystem  
Organism  
Population  
Species
- b) Name and describe the two different types of aquatic ecosystems, and give 1 example of each. (6)
- c) List the two main components of an ecosystem and give 1 example of each. (4)
- d) What is a lentic water body? (1)

**QUESTION 5 (25 marks)**

- a) Define the following terms as used in Soil Science (8)
- i. Soil
  - ii. Weathering
  - iii. Parent Material
  - iv. Pedogenesis
- b) What is soil structure? (1)
- c) Name the structures for the soil samples (A to D) below. (4)



- d) Name the three types of weathering and give 1 example of the processes in each type (6)
- e) Give a brief description of how each of the 3 processes named above occurs and leads to the formation of soil. (6)

**QUESTION 6 (25 marks)**

Name and fully describe the 5 factors affecting soil erosion. (25)