

ORDRE DES INGÉNIEURS DU QUÉBEC

MAY 2023 SESSION

Open Book Exam
Only approved calculators are permitted
Time: 3 hours

14-GE-A3

Sedimentation and Stratigraphy

Question 1 (20 marks) – Sedimentation

Describe and define the process of lithification, what is it and how does it occur? Give an example using a sedimentary rock of your choice.

Question 2 (20 marks) - Classification of Sedimentary Rocks

Describe the primary differences in composition and texture that distinguish the following sedimentary rocks. For each, indicate whether they are detrital, biochemical, or chemical in origin.

- A) Conglomerate vs. Breccia
- B) Quartz sandstone vs. Arkose sandstone
- C) Siltstone vs. Shale
- D) Fossiliferous limestone vs. Micrite

Question 3 (20 marks) – Sedimentary Structures

Sedimentary structures are important clues to understanding the environment in which the sedimentary beds were deposited. For each structure, identify the environment in which it was formed.

- A) Ripple marks
- B) Mud cracks
- C) Cross bedding
- D) Graded beds

Question 4 (20 marks) – Depositional Environment

Compare deposits of an alluvial fan with those of a deep-marine deposit.

Question 5 (20 marks) – Stratigraphy

Use the laws of stratigraphy to analyze the following diagram. List the formations and structures (identified by letters on the diagram) in order from oldest to youngest. For each, identify the law of stratigraphy that allows you to classify it.

