



ZIMBABWE

**MINISTRY OF HIGHER AND TERTIARY EDUCATION,
INNOVATION, SCIENCE AND TECHNOLOGY DEVELOPMENT**

**HIGHER EDUCATION EXAMINATIONS COUNCIL
(HEXCO)**

NATIONAL CERTIFICATE

IN

**CARTOGRAPHY AND GEOVISUALISATION, SURVEY AND GEOMATICS, CIVIL
ENGINEERING AND WATER AND IRRIGATION**

SUBJECT: Geology

**PAPER NO: 313/13/S06
313/18/S06**

DURATION: 3 hours

MARCH/APRIL 2021 EXAMINATION

REQUIREMENTS

INSTRUCTIONS TO CANDIDATE

1. Answer any five (5) questions.
2. Each question carries 20 marks.
3. Start each question on a new page.

QUESTION 1

- a) In defining a mineral, elaborate on the properties of a mineral. (5 marks)
- b) State the Moh's scale of hardness. (10 marks)
- c) Give any five (5) characteristics or physical properties used in identifying a mineral. (5 marks)

QUESTION 2

- a) Give your understanding on the following branches of geology.
 - i) Structural geology (2 marks)
 - ii) Petrology (2 marks)
 - iii) Paleontology (2 marks)
 - iv) Economic geology (2 marks)
 - v) Engineering geology (2 marks)
- b) Describe and explain the formation or origin of the following rocks:
 - i) Igneous rock (4 marks)
 - ii) Sedimentary rock (3 marks)
 - iii) Metamorphic rock (3 marks)

QUESTION 3

- a) Describe the different processes of river erosion. (10 marks)
- b) Briefly discuss the following terms:
 - i) Mechanical weathering (2 marks)
 - ii) Chemical weathering (2 marks)
 - iii) Spheroidal weathering (4 marks)

QUESTION 4

- a) Define:
 - i) Strike (1 mark)
 - ii) Dip (1 mark)
 - iii) Apparent dip (1 mark)
 - iv) Axial plane (1 mark)
 - v) Fold axis (1 mark)
 - vi) Master joint (2 marks)
 - vii) Columnar joint (2 marks)

viii) Tectonic joint

(2 marks)

b) Wit the aid of diagrams, illustrate the following features:

i) Chevron fold

(2 marks)

ii) Symmetrical fold

(2 marks)

iii) Asymmetrical fold

(2 marks)

iv) Overtured fold

(3 marks)

QUESTION 5

a) Describe a geological map.

(3 marks)

b) Relay on the following igneous rock structures:

i) Vesicular structure

ii) Amygdaloidal structure

(3 marks)

c) Explain each of the following terms related to weathering:

i) Unloading

(3 marks)

ii) Insolation

(4 marks)

QUESTION 6

a) Relay on the following landforms:

i) Barrier reef

(5 marks)

ii) Transverse dunes

(5 marks)

b) i) Arrange the following minerals into Carbonates, Sulphates and Chlorides:

– Calcite

– Gypsum

– Dolomite

– Halite

– Sylvite

– Anhydrite

(6 marks)

ii) State any two erosional and transportational processes.

(4 marks)

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