



ZIMBABWE

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

**HIGHER EDUCATION EXAMINATIONS COUNCIL
(HEXCO)**

NATIONAL CERTIFICATE

IN

CIVIL / SURVEY/ CARTOGRAPHY AND WATER

SUBJECT: Geology

PAPER NO: 313//18/S06

DURATION: 3 Hours

MARCH/APRIL 2022 EXAMINATION

REQUIREMENTS

INSTRUCTIONS TO CANDIDATE

Answer ANY FOUR (4) questions.

This paper consists of 3 printed pages.

QUESTION 1

(a) Describe how the following types of rocks are formed:-

(i) igneous rock

(5 marks)

(ii) sedimentary rock

(5 marks)

(iii) metamorphic rock

(5 marks)

(b) State physical properties of minerals.

(10 marks)

QUESTION 2

(a) Describe and explain the oceanic depth zone.

(10 marks)

(b) Relay on the following igneous rock structures:

(i) Vesicular structure

(5 marks)

(ii) Amygdaloidal structure

(5 marks)

(c) The disintegration of rock leads to the formation of soil. State any five (5) weathering process.

(5 marks)

QUESTION 3

What is the practical application in modern day Engineering of the following branches of geology:-

(a) engineering geology

(5 marks)

(b) structural geology

(5 marks)

(c) petrology geology

(5 marks)

(d) economic geology

(5 marks)

(e) palentology geology

(2 marks)

(f) stratigraphy

(1 mark)

(g) Mineralogy

(2 marks)

QUESTION 4

- (a) With the aid of diagrams, describe the following magmatic features: (3 marks)
- (i) Lapolith (3 marks)
 - (ii) Phacolith (3 marks)
 - (iii) Sill (3 marks)
 - (iv) Stock (3 marks)
- (b) Distinguish zone of saturation from vadose zone. (4 marks)
- (c) Describe the following theories of the earth's origin: (4 marks)
- (i) Nebular hypothesis (5 marks)
 - (ii) Gaseous tidal theory

QUESTION 5

- (a) At an engineering site where a Government museum is being constructed. The rock formation present in the foundation trenches exhibits presence of limestone rock. As the lead Engineer what advice would you give to the project manager? (10 marks)
- (b) A glacier is essentially a huge mass of ice resting on land or floating in the sea next to land. State two ways in which glaciers are classified? (2 marks)
- (c) State any two types of Alpine glacier and Continental glacier. (4 marks)
- (d) Articulate on the river transportation system. (9 marks)

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