



ZIMBABWE

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

**HIGHER EDUCATION EXAMINATIONS COUNCIL
(HEXCO)**

NATIONAL CERTIFICATE

IN

WATER RESOURCES AND IRRIGATION ENGINEERING

SUBJECT: Construction Methods

PAPER NO: 384/19/S02

DURATION: 3 Hours

MARCH/APRIL 2022 EXAMINATION

REQUIREMENTS

INSTRUCTIONS TO CANDIDATE

This paper consists of 3 printed pages.

QUESTION 1

Briefly write short notes on the following general properties of materials:

- a) Bulk density (4 marks)
- b) Porosity (4 marks)
- c) Durability (4 marks)
- d) Specific gravity (4 marks)
- e) Spalling resistance (4 marks)

QUESTION 2

- a) Using a labelled diagram of the blast furnace explain the iron extraction process. (10 marks)
- b) Using a labelled diagram, explain the cement formation process. (6 marks)
- c) Briefly describe the different methods of curing concrete. (4 marks)

QUESTION 3

- a) What properties have to be considered when selecting a suitable material for construction of different irrigation systems? (10 marks)
- b) Outline the principles of a good drainage. (10 marks)

QUESTION 4

- a) A building contractor was awarded a contract to build a double storey structure in the city center. If the maximum number of workers onsite at any time is 100. Give the welfare arrangements to be made for these workers. (8 marks)
- b) State three (3) reasons and explain why any part of a site should be effectively cleared of vegetative matter or topsoil. (6 marks)
- c) Briefly explain three (3) factors that may be considered in preparing a storage for construction materials. (6 marks)

QUESTION 5

- a) Give and explain five (5) methods of demolition of building structures. (10 marks)
- b) Name any five (5) transport vehicles in the construction industry. (5 marks)
- c) Explain factors to be considered for achieving maximum efficiency when planning site lay outs. (5 marks)

QUESTION 6

- a) Explain the following:
- | | | |
|------|---------------------|-----------|
| i) | Variable costs | (2 marks) |
| ii) | Fixed costs | (2 marks) |
| iii) | Provisional sums | (2 marks) |
| iv) | Day works | (2 marks) |
| v) | Nominated suppliers | (2 marks) |

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