NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF SCIENCE AND TECHNOLOGY EDUCATION

DEPARTMENT OF TECHNICAL AND ENGINEERING EDUCATION AND TRAINING

PTE:6258 ADVANCED CONSTRUCTION

Main Examination

November 2024

This examination paper consists of ONE (1) printed pages

Time allowed:	3 hours
Total marks:	100
Special Requirements:	NIL
Examiner:	Mr. A. Sithole
External Examiner:	Dr. Kahanji

INSTRUCTIONS

1. Answer any **FOUR** questions.
2. Sub-division marks are shown in brackets
3. Begin each question on a fresh page and number it.
4. Unless otherwise stated, all dimensions are in millimetres. Dimensions not given are left to your discretion.
5. Credit will be given for accuracy, legibility and neatness.

MARK ALLOCATION

QUESTION	MARKS
1	25 marks
2	25 marks
3	25 marks
4	25 marks
5	25 marks

Question 1

a. Explain how the use of on-site resources makes construction sustainable.[5marks]

b. Define the term "Value Engineering" in detail. [5marks]

c. Explain the objectives of value engineering. [5marks]

d. Briefly discuss the techniques for labour productivity improvement. [5marks]

e. What are the economic value of sustainable construction? [5marks]

Question 2

a. Explain the term Integration of intelligent systems as used in construction [5marks]

b. What is modular Co-ordination? [5marks]

c. Discuss the practical benefits of modular Co-ordination. Justify how it will be beneficial to the construction industry. [15marks]

Question 3

a. Describe the term Robot-oriented design in construction. [5marks]

b. Discuss the concept of sustainable construction and explain the indicators of sustainable construction for waste minimization [20marks]

Question 4

a. Explain the following terms as used in construction projects

i. Synergetic contributions [5marks]

ii. Automated systems [5marks]

b. Discuss the factors affecting the efficient use of resources in the construction industry and how this contribute to the labour productivity. [15marks]

Question 5

a. State the advantages and disadvantages of Automation construction. [6marks]

b. Outline the key resources in the construction industry and discuss the issues that militate against the efficient use of the resources. [9marks]

c. Explain the term constructability and discuss the methods for identifying

and preventing constructability constraints [10 marks]

" End of Examination Paper "