



NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF THE BUILT ENVIRONMENT

DEPARTMENT OF ARCHITECTURE,

CONSTRUCTION TECHNOLOGY IV

BAR 3111

Examination Paper

December 2024

This examination paper consists of 5 pages.

Time Allowed:

3 Hours

Total Marks

100

Special Requirements

A1 DRAWING SHEETS, Technical Drawing Instruments

Examiner's Name:

Arch. F. M. Svunurai

INSTRUCTIONS

1. Answer Question 1 and any Two (2) other questions of your choice.
2. You are encouraged to use well annotated sketches to illustrate your answer, avoid long paragraphs.

MARK ALLOCATION

QUESTION	MARKS
1.	50
2.	25
3.	25
4.	25
5.	25
6.	
TOTAL	100

QUESTION 1

CONSTRUCTION DRAWING & DETAILING

The principal of your firm has assigned you to be the project architect for the design of VENE SME Mall for a Client who owns a building in the CBD at the corner of Le Corbusier Avenue & Vernon Mwamuka Street. They have provided you with a sketch of the site and the proposed layout as shown in the attached drawing.

The Complex is supposed to be a double-story open-plan building, with 3x3 Cubicle interior partitions to accommodate SME Traders of various goods & services. The complex also requires amenities such as public toilets. Traffic is supposed to flow freely in and out of the complex and between the floors. The Front windows and all finishes and materials are required to give a modern retail ambiance to the whole Mall.

You are now required to produce architectural construction drawings before the next meeting this afternoon. Your drawing set is supposed to have the following:

- i. A Floor Layout Plan showing the proposed Structure, External Walls, Partition Walls Finishes, Stairs, Toilets, and Materials that you are recommending for the various areas. (25)
- ii. A Detailed Section through the building at a position of your choice (to be indicated in standard format on the Floor Plan). The section should capture the details and specifications from the Foundations, First Floor Slab, and up to and including your proposed Roof. (15)
- iii. A Shopfront Elevation and at least two (2) Detail Diagrams for specific building components of your choice that you have designed, e.g. Entrance Canopy, Shading Device, Building Front Canopy over the Pavement. (details can be in sketch format) (10)

QUESTION 2

SITE SELECTION & MANAGEMENT

- a) State and explain the Key factors that you would summarise in a site assessment report on the buildability of a particular site before commencing a project. (10)
- b) Identify the key professional members of a Construction project team, state their roles and give examples of the building/project aspects that they will be specifically responsible for. (10)
- c) Briefly describe how the legal building code can affect an architect's decisions on a Construction project with regards to
 - i. Building Lines
 - ii. Building Height
 - iii. Building Use/Function
 - iv. Lighting & Ventilation
 - v. Construction Waste/Noise/Pollution Management (5)

QUESTION 3

FOUNDATION SYSTEMS

- a) Explain with the aid of sketches, the concept of foundation settlement that occurs in built structures. (5)
- b) Illustrate how the guiding principles of how the pile foundation system works and describe the situations where you would recommend pile foundation systems to be the suitable foundation option to be used. (10)
- c) With aid of sketches suggest a foundation system for a single-storey residential house in a wetland area with randomly dispersed outcrops of stable ground. (15)

QUESTION 4

FLOORS & FLOOR FINISHES

- a) With the aid of a well labelled diagram, describe how solid concrete ground floor is constructed to meet its functional requirements in a simple office or residential building (10)
- b) Illustrate two (2) possible options for upper floor slabs technologies that can be used in multi-story building construction. (10)

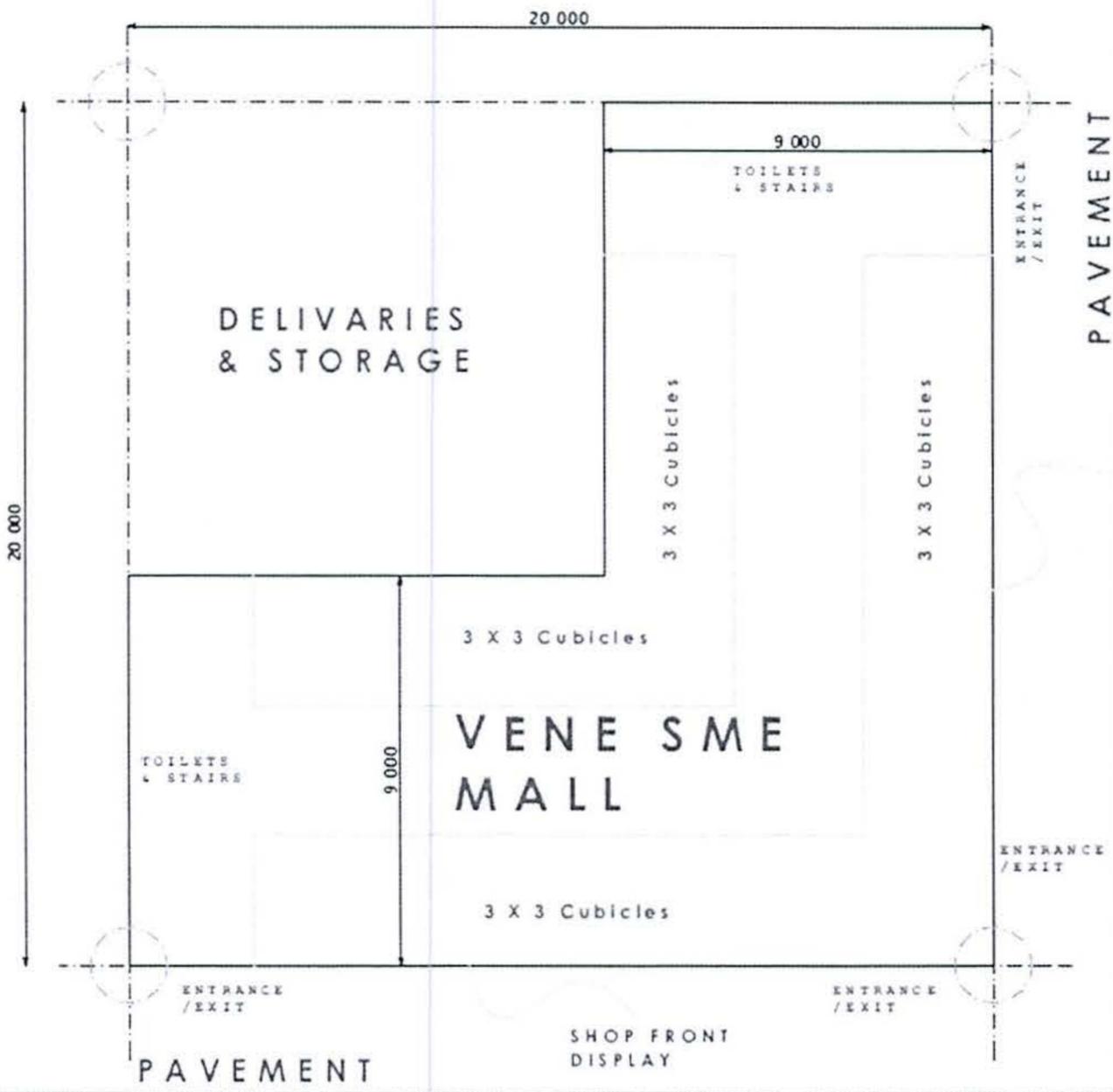
- c) State and explain the floor finish types you would specify in a mixed-use building for installation in the following areas
- i. Retail Area
 - ii. Retail Storage Areas
 - iii. Bank Management Offices
 - iv. Kitchen & Bathrooms
 - v. Movie House
- (5)

QUESTION 5

WALLING SYSTEMS

- a) Walls are broadly divided into two main categories, state and explain the two categories in which we classify wall types on buildings. (4)
- b) Define the term "Partition" as applied to walls and give examples of the different types of partition walls and their application in design & construction (6)
- c) State and explain with illustration the key functional requirements of walling systems, describe how walls are designed/built to fulfil these performance requirements. (15)

Service Lane



Vernon Mwamuka Road

Le Corbusier Avenue