



NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF THE BUILT ENVIRONMENT

DEPARTMENT OF ARCHITECTURE

BUILDING CONSTRUCTION V

AAR 5102

Examination Paper

December 2024

This examination paper consists of 3 pages

Time Allowed: 4 hours

Total Marks: 100

**Special Requirements: A1 BOND PAPER**

Examiner's Name: Arch. C. Maedzenge

**INSTRUCTIONS**

1. Answer Question 1 and any other (3) three.
2. Question 1 is Compulsory.
3. ***Special Requirements: A1 Sheets, T-squares, Drawing Boards Masking Tape.***
4. Use an appropriate scale for drawings. Marks will be awarded to neatly presented work.

**MARK ALLOCATION**

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

1. a) Draw a section through a disaster relief storage warehouse whose structure is composed of steel portal frames. The storage warehouse covers an area of 36mx18mx6m height. The warehouse shall have a wall of up to 2,4m. Suggest appropriate materials for the wall cladding and roof. (15)
- b) Draw typical details at appropriate scales of the following:
  - i) Eaves and apex details (5)
  - ii) Rainwater deflection detail at the junction of the wall and cladding material. (5)
2. (a) Explain the uses of a 'T' slabs in building construction. (3)
- (b) Outline the application of pre or post tensioned concrete in the construction industry in Zimbabwe. (10)
- (c) Using sketches explain the advantages and disadvantages of using concrete as a building envelope material in complex structures. (12)
3. (a) Define a folded plate roof. (3)
- (b) State the difference between a space frame and a space deck giving examples of building typologies to which they can be applied. (10)
- (c) List the types of domes available in the construction. Explain their advantages and disadvantages. (12)
4. (a) (i) Explain the functional requirements of cladding. (4)
- (ii) List two disadvantages each of Aluminum, timber, stone and glass as a cladding material. (8)
- b) (i) Define an infill panel and show typical details of infill panels using timber. (8)
- (ii) Show a typical detail of an infill panel for sound, heat and moisture protection. (5)

5. You have been commissioned to do a refurbishment on a five-story building. The budget doesn't allow for any alterations to the structure and a glazed curtain wall is proposed while maintaining the existing fenestration.
- a) With the aid of sketches illustrate how the curtain wall will be constructed. (18)
- b) Explain with the aid of sketches how the natural ventilation system on the building will be maintained. (7)