



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY**

FACULTY OF ENGINEERING AND THE BUILT ENVIRONMENT

DEPARTMENT OF LAND AND SPATIAL SCIENCES

QUALIFICATION(S): BACHELOR OF PROPERTY STUDIES DIPLOMA IN PROPERTY STUDIES	
QUALIFICATION(S) CODE: 08BOPS 06DIPS	NQF LEVEL: 6
COURSE CODE: BCS512S	COURSE NAME: BUILDING CONSTRUCTION
EXAMS SESSION: NOVEMBER 2023	PAPER: THEORY
DURATION: 3 HOURS	MARKS: 100

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER(S)	MRS ELINA TEODOL
MODERATOR:	MR VERINJAERAKO KANGOTUE

INSTRUCTIONS
<ol style="list-style-type: none">1. Read the entire question paper before answering the Questions.2. Please write clearly and legibly!3. The question paper contains a total of 7 questions.4. You must answer <u>ALL QUESTIONS</u>.5. The question paper contains appendix A. Detached, complete, insert and submit them with the Examination Book (s).6. Make sure your Student Number is on the EXAMINATION BOOK(S).

PERMISSIBLE MATERIALS

1. Non-programmable Scientific Calculator

THIS QUESTION PAPER CONSISTS OF 12 PAGES (Including this front page)

Question 1

For each of the following statements indicate whether it is 'TRUE' OR 'FALSE'. Each correct answer carries 1 mark. (20)

- a) A complete set of blueprints will always include a colour scheme for painting the walls.
- b) The traditional set-up of the building team in the construction industry includes the employer and architect only.
- c) Any foundation may fail because of subsidence caused by underground mining and increase in the water table only.
- d) The device that provides for flushing of water and receiving of excrement is known as Water Closet (WC's).
- e) The performance requirements of any building include among others its appearance and sound control, dimensional suitability, weather exclusion and fire protection.
- f) System building (Closed system Building) refers to a method of erecting a building based on the form of construction in which the component parts of the building fabric are partly factory produced.
- g) Slenderness ratio is the proportional relationship between thickness of walls and their foundations width.
- h) In building construction working on sloping sites refers to 'reducing floor analyses.
- i) Building component will develop damages whenever the stress in the component exceeds its strength.
- j) Party wall refers to a wall separating two detached properties that are in separate ownership such as in terraced houses.

- k) Electrical drawings contain information about the piping for water supply system.
- l) A Side Hinged Folding door provide easy 100% opening of doorway.
- m) Building finishes can be categorised into groups of wall finishes and joinery and ironmongery only.
- n) Pitched roof is the type of roof suitable in plains where rainfall is insufficient, and temperature is high.
- o) In floor construction, floor systems must transfer their loads horizontally across space to either beams or columns or to bearing walls.
- p) A clerk of works is a person or firm who undertakes to complete a building project in accordance with the contract documents on behalf of an employer and has full control of all operations on site.
- q) When clearing a site, only bushes and trees need to be removed.
- r) Membrane Structure refers to structures where non-structural membranes act as walls and roofs supported by tension or compression members, like tents.
- s) In brick masonry, if the bricks are laid by the shorter face of the brick as seen in the elevation or wall face, it is generally known as a stretcher bond.
- t) A roof which slopes in four directions, is called Hip roof.

[20]

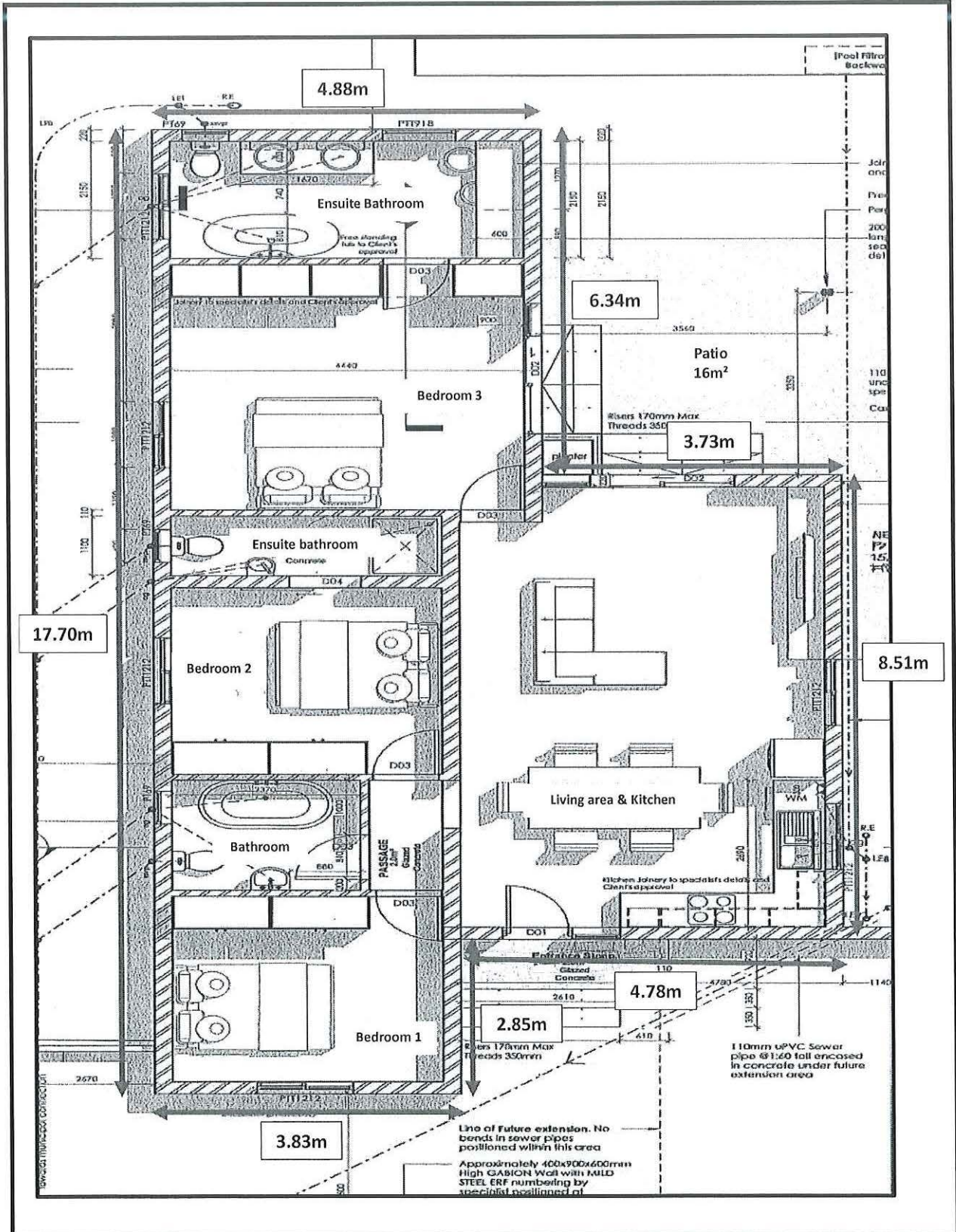
Question 2

- a) Distinguish between the following terms as used in building construction.
- i) Substructure and Superstructure (3)
 - ii) Natural foundation and artificial foundation (2)
 - iii) English bond and Flemish bond (2)
- b) Outline the six (6) functions of external walls of a building. (6)

[13]

Question 3

Use the architectural drawing of the house below to answer the following questions:

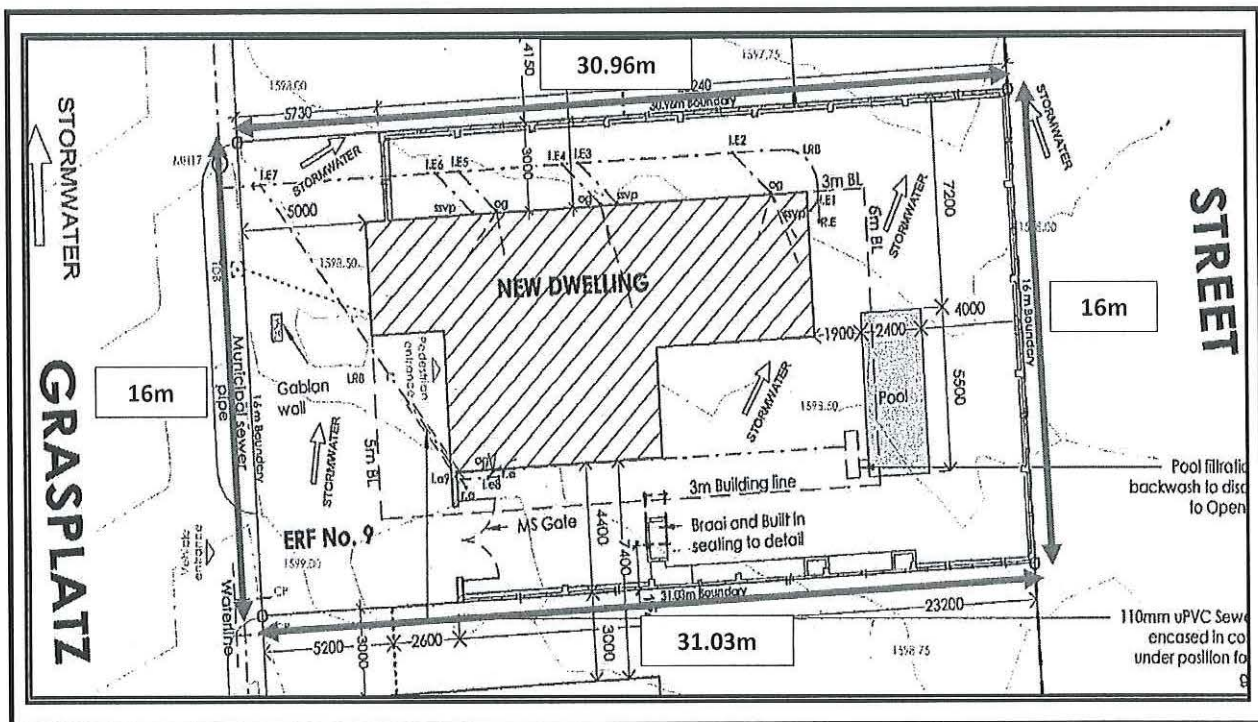


- a) Identify the type of building sketch (1)
- b) Mention any six (6) accommodation offered by the residential facility. (3)
- c) What is the Total Building Area? (1)
- d) What is the Total Floor Area? (1)
- e) Calculate the Area of the building (in m²) (5)

[11]

Question 4

With reference to the site plan of Erf 9 Nubuamis, Windhoek provided below, answer the following questions:



- a) Compute the running metres of the boundary walls for the subject property. Ensure accuracy in your calculations. (2)
- b) Determine the total land size of the subject property in square metres. Show your step-by-step calculations to demonstrate the process. Accuracy in computation is crucial for this

assessment.

(3)

- c) Imagine you are a property developer assessing the construction costs for boundary walls. Given that it cost N\$235,000 to construct the brick boundary wall measuring a length of 97.8 running metres and a height (h) of 2 metres for an adjacent property.

Calculate the rate per square metre for constructing the brick boundary wall. Justify your calculation, considering the total cost and total area (in square metres) covered by the boundary wall.

(3)

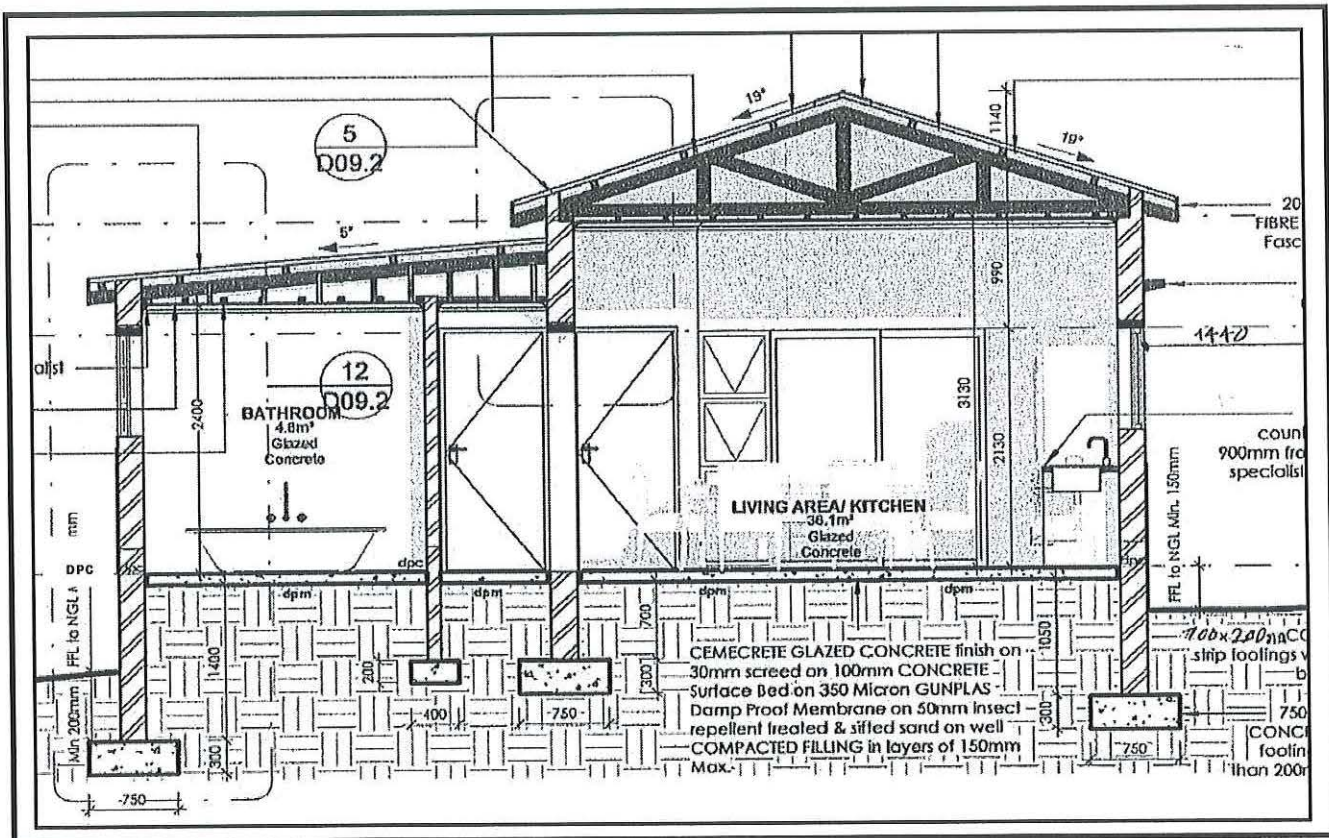
- d) Utilizing the rate per square metre determined above for (c), compute the total cost to construct the boundary wall for the subject property, assuming the height of the wall (h) is 2 metres. Clearly outline your steps and assumptions in the calculation.

(4)

[12]

Question 5

Use the building sketch below to answer the following questions:

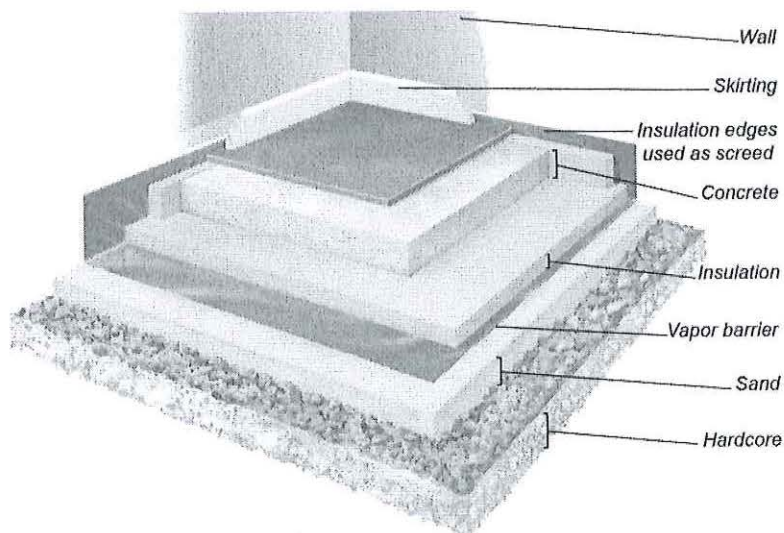


- a) Identify the type of building architectural sketch (1)
- b) What is the height of the external walls (in metres) from the Damp Proof Course to the brickplate? (2)
- c) What is the angle of slope of the flat and the pitch roofs (in degrees) as illustrated in the building sketch? (2)
- d) Determine and specify the type of foundation depicted in the diagram above. (1)

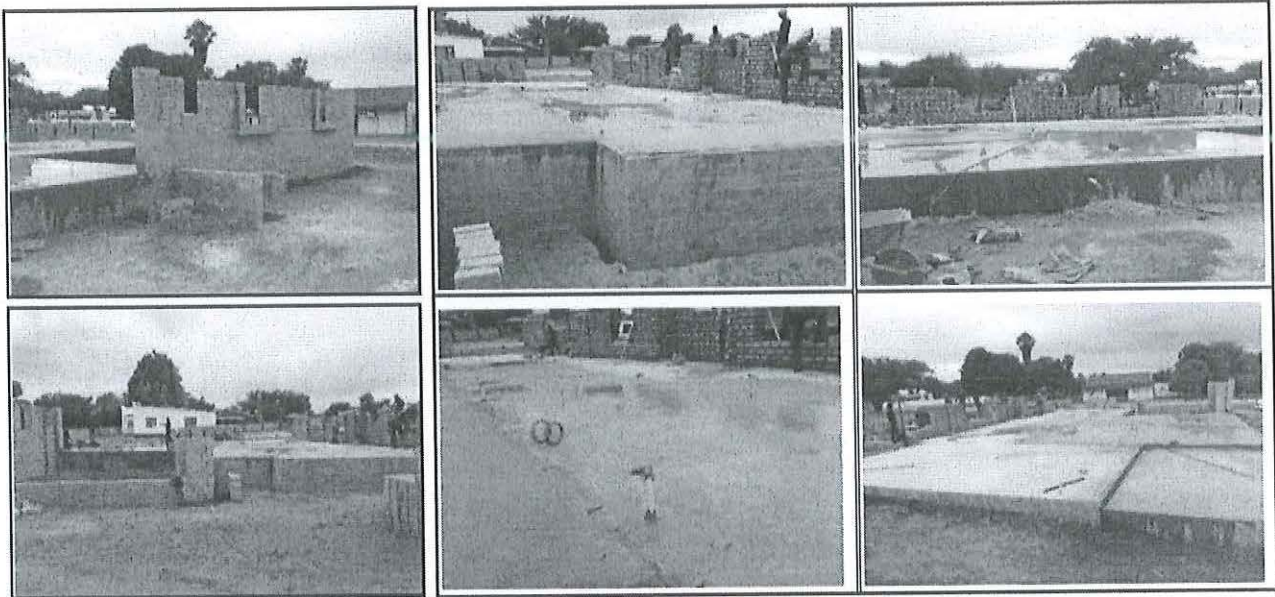
[6]

Question 6

- a) Identify the components of a typical floor construction in buildings as illustrated below. (4)



- b) Mention any two (2) characteristics of mortar. (2)
- c) State the four (4) requirements of any building foundation. (4)
- d) Erf 1566 Rocky Crest Windhoek was inspected by a property valuer on the 16th of November 2020. Below are the images taken during the initial physical inspection. All the work seems to be progressing well and meet the bank's minimum requirements in terms of workmanship.



The initial progress inspection was done at 20% and the payment due to the Contractor is N\$140,000.00 while the retention amount is N\$560,000.00.

Complete the table attached as Appendix A by calculating the progress payment amount due to the contractor at the following stages of the construction work: (12)

- i) 50%
- ii) 75%
- iii) 85%
- iv) 95%

TOTAL % OF WORK	100.00%	20.00%	(A) 50.0%	(B) 75.0%	(C) 85.0%	(D) 95.0%
DATE OF INSPECTION		16th Nov 2023				
CONTRACT PRICE	N\$	700,000.00				
WORK DONE	N\$	140,000.00				
TO COMPLETE	N\$	560,000.00				
PROGRESS PAYMENT AMOUNT	N\$	140,000.00				

[22]

Question 7**Construction Challenges & Decision Making**

In the dynamic realm of construction, professionals frequently encounter various challenges and scenarios that demand critical thinking, informed decision-making, and strategic problem-solving. The following case studies and scenarios mirror real-world situations that you, as a construction industry professional, may face in your career. They are designed to test your knowledge, analytical skills, and ability to make decisions that prioritise both the project's success and the welfare of all stakeholders involved.

Read each scenario carefully and provide thoughtful and well-reasoned solutions to the challenges presented. Remember, in the construction industry, every decision can have lasting impacts, so consider both immediate and long-term consequences in your responses.

ANSWER ALL THE QUESTIONS.

- a) A large construction project is underway. The Project Manager is on an unplanned leave, and the Resident Engineer notices that the subcontractors are not following the specified contract documents. The subcontractors argue that their way is faster and more cost-effective.
- i) Analyse the situation. What are the potential implications if the subcontractors continue not following the contract documents? (2)
 - ii) Evaluate the Resident Engineer's role in this scenario. What should the Resident Engineer do to handle this situation? (3)
 - iii) Propose a strategy that should be followed to avoid such a situation in the future. (2)
- b) The Clerk of Works has identified that the materials supplied are substandard and could compromise the structural integrity of the building. What immediate and long-term actions should be taken to resolve this issue? (2)

- c) A subcontractor specialising in reinforced concrete is significantly lagging behind the schedule, causing delays in subsequent tasks. How should the Project Manager handle this, ensuring minimum impact on the project? (3)
- d) Unstable Ground: You are a site planner and have just been handed the results of a soil test for a new residential project. The soil is loose and moist in some areas, potentially indicating a risk for future subsidence.
- i) How would you approach this challenge? (3)
- ii) Would you recommend construction adaptations, or would you advise selecting a different site? Justify your decision. (1)

[16]

Student Number:.....

APPENDIX B

QUESTION 6 (d) ANSWER SHEET

TOTAL % OF WORK	100.0%	20.00%	i) 50.0%	ii) 75.0%	iii) 85.0%	iv) 95.0%
DATE OF INSPECTION		16th Nov 2023				
CONTRACT PRICE	N\$	700,000.00				
WORK DONE	N\$	140,000.00				
TO COMPLETE	N\$	560,000.00				
PROGRESS PAYMENT AMOUNT	N\$	140,000.00				

[12]