

UNIVERSITY OF SWAZILAND
FACULTY OF HEALTH SCIENCES
DEPARTMENT OF ENVIRONMENTAL HEALTH SCIENCE
MAIN EXAMINATION PAPER DEC 2018

TITLE OF PAPER : **BUILDING CONSTRUCTION
TECHNOLOGY I**

COURSE CODE : **EHS 203**

DURATION : **2 HOURS**

MARKS : **100**

INSTRUCTIONS : **ANSWER ANY FOUR QUESTIONS**

: EACH QUESTION CARRIES 25 MARKS

**: BEGIN EACH QUESTION ON A SEPARATE
SHEET OF PAPER**

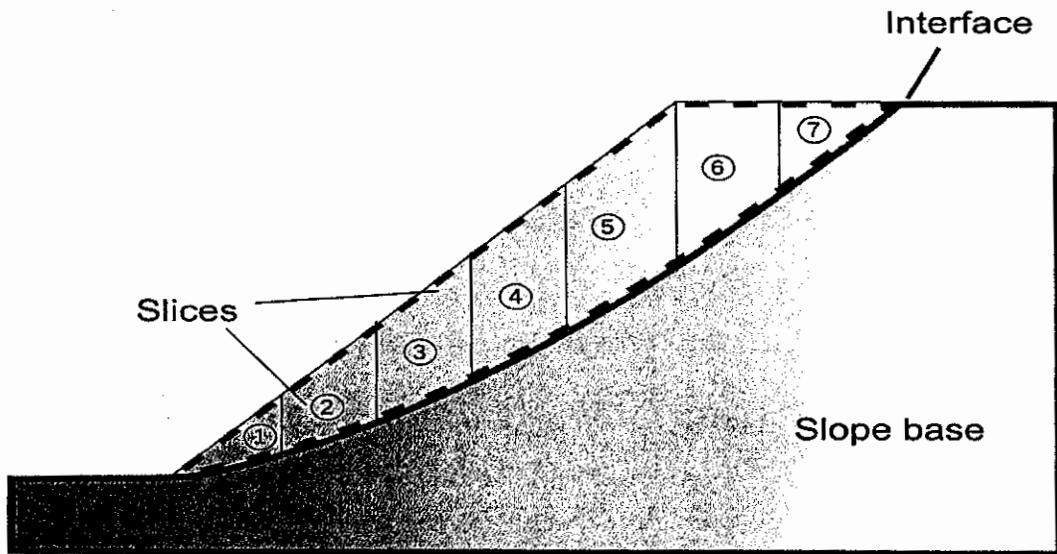
**DO NOT OPEN THIS QUESTION PAPER UNTIL PERMISSION IS GRANTED
BY THE INVIGILATOR**

QUESTION ONE

- a) In a few words explain the notion of “buildings as environmental envelopes” [8]
- b) Give four examples each to indicate your understanding of natural and artificial mechanisms for environmental controls in buildings [8]
- c) Taking the example of timber as a building material explain in detail the LCA concept [9]

QUESTION TWO

- a) Describe the following basic methods of construction : [14]
 - i. Solid construction
 - ii. Framed or skeletal construction
 - iii. Panel or boxed construction
 - iv. Folded plate construction
 - v. Insitu
 - vi. Prefabrication
 - vii. Applied methods of construction
- b) Given the following site topography, sketch out and describe three excavation techniques employed in order to put up a building. For each technique state advantages and disadvantages [9]



- c) Discuss how the decrease in water cement ration affect the following properties of concrete: [2]
- i. Consistence
 - ii. Workability

QUESTION THREE

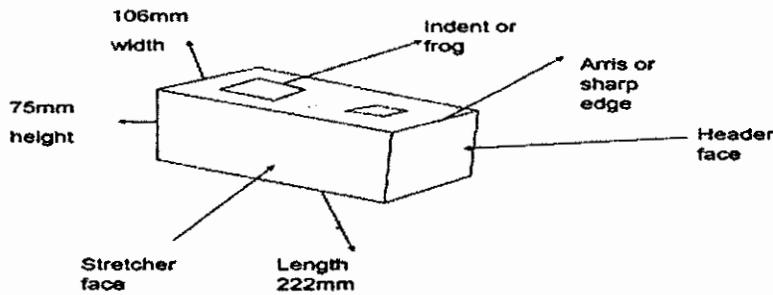
- a) Draw sketches to depict the following in brickwork terminology; [5]
- i. Tothing
 - ii. Quoin or corner brick
 - iii. Perpend
 - iv. Lap
 - v. Bat
- b) Describe ten items that make up a typical expenditure profile for a building project and state at what phase of the project each item is required. [10]
- c) Describe five key elements in a contracts document [5]
- d) Which building material is most suitable for the following component part of a building? You may suggest more than one building material. [5]

| COMPONENT PART OF BUILDING | SUGGESTED BUILDING MATERIAL |
|-----------------------------------|------------------------------------|
| Roof truss | |
| Window frame | |
| Floor slab | |
| Foundation | |
| Walls | |

QUESTION FOUR

- (a) Identify the bonds for the description given below:
- i. This bond is used above doors and window openings. Bricks are placed with the headers facing the outside. [3]
 - ii. Bricks are placed with their longest side facing the outside of a wall. This bond is used for the main wall section [3]
 - iii. This bond consist of alternate course of headers and stretchers [3]
- (b) Differentiate between the slump test and the cube test [6]
- (c) Sketch out an imaginary typical site layout to depict appropriate site layout. [8]
- (d) Given that a brick has the following dimension.

Brickwork terminology

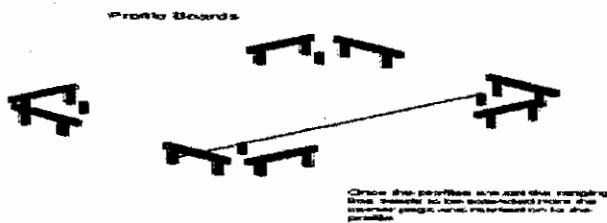


- i. What is the size of a mortar joint? [1]
- ii. What is the area of the brick? [1]

QUESTION FIVE

a) Maple Construction Company has been awarded the tender to build a major road highway in Swaziland connecting KMIII International Airport and Manzini City. Summarize the Environmental impacts that may arise as a result of this road construction activities. [10]

b) The following is a sketch of a profile board. State five uses of a profile board. [5]



- c) Dampness in a building is cause of great concern. What are the causes, impacts and possible remedies of dampness in a building? [5]
- d) What are the usual components of a façade in a house and what would you do to enhance a façade [5]