

UNIVERSITY OF SWAZILAND
Faculty of Health Sciences

**DIPLOMA IN ENVIRONMENTAL HEALTH
SCIENCES**
FINAL EXAMINATION PAPER DEC 2011

TITLE OF PAPER : BUILDING CONSTRUCTION
TECHNOLOGY

COURSE CODE : EHS 210

DURATION : 2 HOURS

MARKS : 100

INSTRUCTIONS : ANSWER ANY FOUR QUESTIONS

: EACH QUESTION CARRIES 25 MARKS

: NO PAPER SHOULD BE BROUGHT INTO
NOR OUT OF THE EXAMINATION ROOM

: BEGIN EACH QUESTION ON A
SEPARATE SHEET OF PAPER

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

QUESTION ONE:

COMPULSORY MULTIPLE CHOICE QUESTION.

Choose one answer for each [1 marks per point]

1. Which of the following is **NOT** part of the definition of 'building' according to the Building Act, 1968:
 - a. Sewer or water main which is, or is vested in a public authority
 - b. A structure
 - c. A fixture
 - d. Erection of whatever kind whether temporary or permanent

2. The wall thickness and foundation widths when setting out a building are marked on
 - a. the ground floor
 - b. the concrete slab
 - c. the profile board
 - d. the four stout pegs

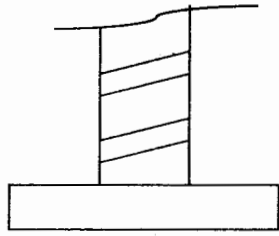
3. Class A buildings according to the Building Act, 1968 include;
 - a. Office premises
 - b. Shop premises
 - c. Processing premises
 - d. Buildings of three or more storey's or comprising three or more dwellings

4. Batching refers to
 - a. stacking of building materials
 - b. stumping base in preparation for putting foundation
 - c. producing fresh concrete
 - d. non of the above

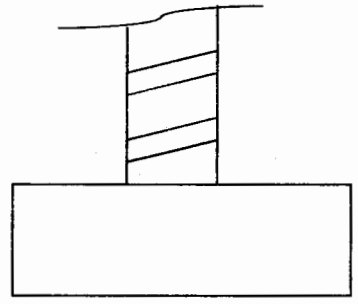
5. The term *COURSE* in brick or block wall construction means
 - a. the number of bricks or blocks in a line of bricks or blocks.
 - b. A line of brick or blocks in the height of a wall
 - c. The pattern of laying the bricks or blocks
 - d. The number of lines of vertical and horizontal mortar joints

6. The term *BUILT ENVIRONMENT* can be defined as
 - a. Gods creation
 - b. rivers, and seas
 - c. Created by man with or without the aid of the natural environment
 - d. Surroundings which can be natural

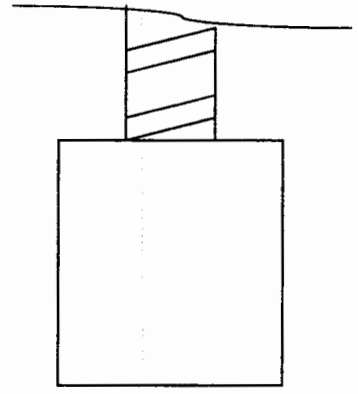
7. Which sketch illustrates a pile foundation?



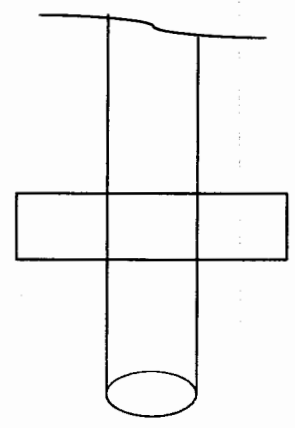
a.



b.

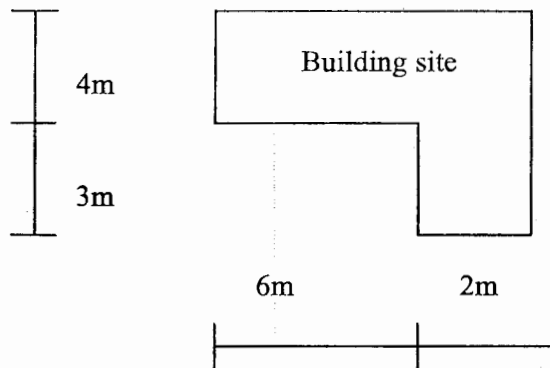


c.



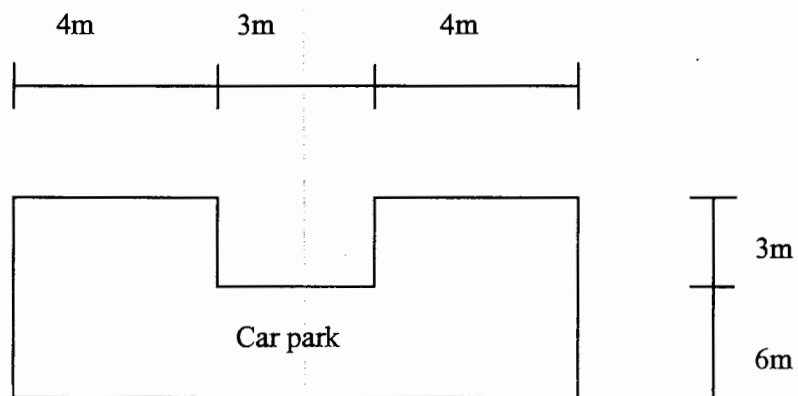
d.

8. What is the area for the soil stripping in the following building site?



- a. 37m^2
- b. 56m^2
- c. 38m^2
- d. 52m^2

9. What is the area of the paving for the car park?



- a. 90m^2
- b. 72m^2
- c. 99m^2
- d. 97m^2

10. Which of the following must a dpm not be?
- Impermeable to water
 - Tough enough to remain undamaged when laying the concrete slab
 - Continuous with the dpc in adjoining walls
 - Permeable to water
11. In order to make good contribution to the building construction industry which of the following is **NOT** necessary?
- training
 - practical competence
 - experience
 - cognitive skills
12. Densification in building construction is achieved by
- lateral construction
 - sustainability construction
 - vertical construction
 - incremental housing technology
13. Which of the following factors is **NOT** true in trying to determine features of a building?
- Architectural styles
 - Availability of building material
 - Real estates
 - Building standards
14. Recycling in building construction is an important environmental consideration. To which of the following phases of the LCA does it belong to?
- demolition
 - use
 - waste treatment
 - production
15. Primary elements in building construction refer to:
- All structures below ground level including ground floor bed
 - completion of the structure including completion around and within openings in primary elements
 - Components of the building carcass above the substructure excluding secondary elements, finishes, services and fittings.
 - all structures above substructure both internally and externally
16. Which of the following features is **not true** for the sub contract?
- client has the competence and resources to plan and administer the project
 - Client retains responsibility for both design and construction
 - A contract document developed by contractor and not available before contract is awarded.
 - Can give lower building costs and complete control construction

17. A retaining wall belongs to the
- Superstructure
 - Finishes
 - Substructure
 - basement construction
18. Pile foundations are
- Usually constructed of reinforced concrete and in plan square
 - Useful where low bearing capacity soils are encountered
 - Used when suitable foundation conditions are not present near ground level
 - Used to spread the load of the superstructure over a large base to reduce the load per unit area being imposed on the ground
19. In situ in building construction terminology usually refers to
- Prefabrication
 - Pre cast
 - Built on site
 - Local inspection
20. Which of the following does **NOT** refer to door requirements and specifications?
- Provide for safety and security
 - emergency escape
 - Keeping interior of building cool in summer
 - Ventilation
21. Which of the following refers to the statement "Simple transfer weight of the building to the ground"
- Foundation
 - Wall plate
 - Slab
 - Roof trusses
22. Certain conditions make the construction of foundation difficult. Which of the following is not?
- Natural low bearing capacity of soil
 - High water table-giving rise to permanent dewatering costs
 - Porous subsoil
 - Subsoil subject to moisture movement or plastic failure
23. Which of the following is not true about concrete?
- When concrete dries it actually stops getting stronger
 - High water to cement ratio leads to low strength, but good workability
 - Concrete retains its shape and dimensions when subjected to changes in moisture and temperature
 - Concrete does not need to dry out in order to harden
24. The term 'climatic design' in building construction means
- Designing a building to ensure a healthy, comfortable indoor environment
 - Designing a building to ensure sensitivity of the building to settlement
 - Designing a building to ensure owners requirements & preferences

d. Designing a building to ensure reduction in heat loss & risks of condensation

25. The most expensive part of a building is the:

- a. Foundation
- b. Block work
- c. Roof work
- d. Electrical work

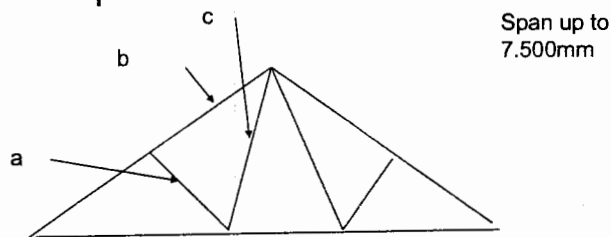
QUESTION TWO

A) Outline the process of concrete making [6]

B) The following is a sketch of a steel roof truss. Label it fully and state which parts provide tensile and compressive strengths respectively [5]

Steel Roof Trusses

- Component parts



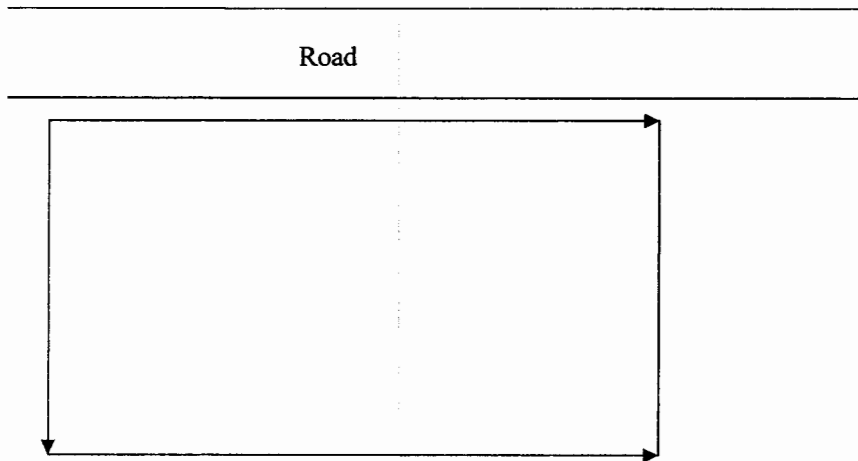
- C) Contrast between the work of an Environmental Health Officer and that of a Building Inspector in Building construction [4]
- D) Explain the significance of the tendering process in a building construction project [4]
- E) Explain the concept of Bonding in brickwork. By means of a rough sketch show three different types of bonding you know [6]

QUESTION THREE

A) Inyatsi Construction Company has been awarded the tender to build the Sikhuphe International Airport as well as the road from Manzini to the airport. Summarize

the Environmental impacts that may arise as a result of the construction activities. [10]

- B) The following represents an incomplete building site layout that you are assigned to be in charge of. Complete it in a separate sketch showing all the important features that should be at the site. [5]

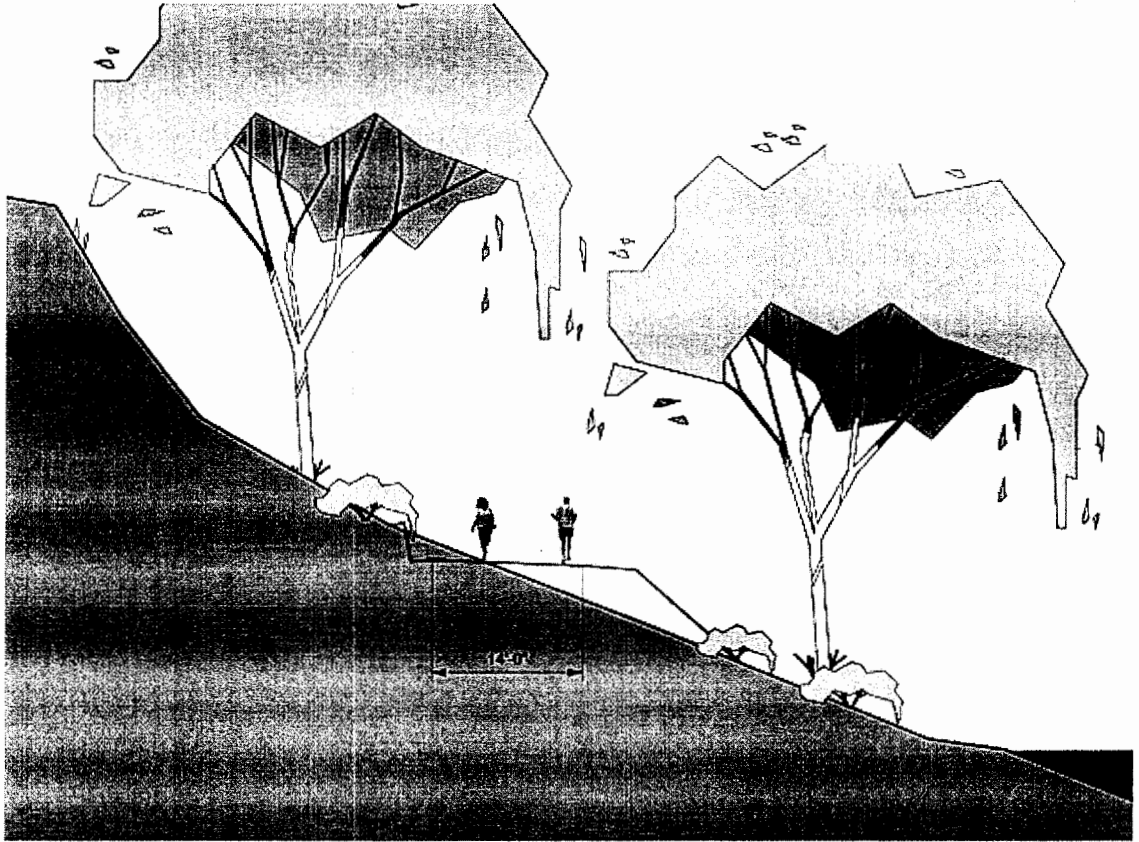


- C) As a construction site manager what would be your role [5]

- D) Dampness in a building is cause of great concern. What are the causes, impacts and possible remedies of dampness in a building [5]

QUESTION FOUR

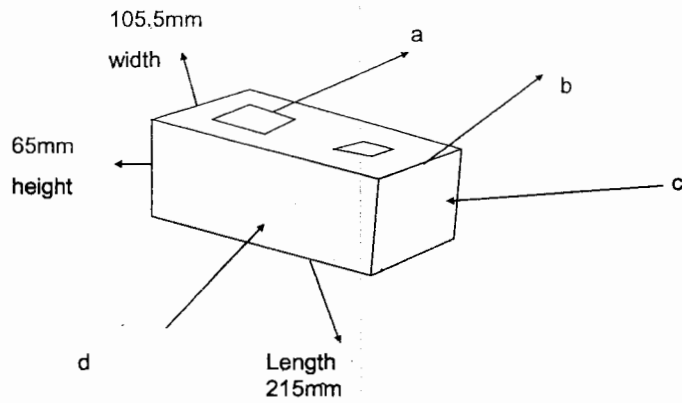
- A) Given the following site topography sketch out and describe three excavation techniques you would employ in order to put up a building. For each technique used state advantages and disadvantages [9]



B) Describe the methodology used in assessing how different building construction operations and use of different materials influence the environment [10]

C) The following represents a brick used to construct walls in a building. Label the brick fully a, b, c and d. [4]

Brickwork terminology

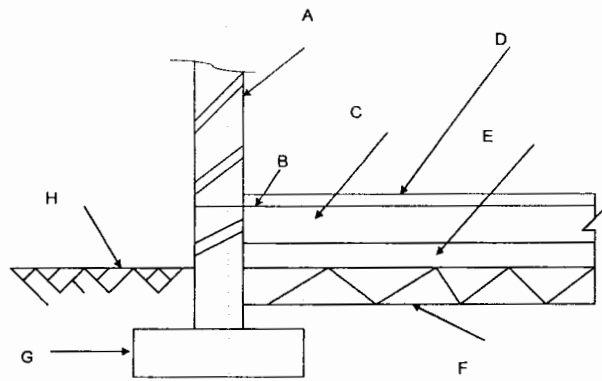


D) Using appropriate examples outline the significance of the timber industry in building [2]

QUESTION FIVE

A) The following is a sketch of a solid ground floor. Label the sketch and give the usual dimensions for A, G, C and E. [9]

SOLID GROUND FLOOR



B) If you were to choose between wooden doors and metal doors in a domestic building which one would you choose. Give reasons for your answer [4]

C) Painting and rendering are two very important activities in building construction. Write a few notes on each to demonstrate your understanding of the two different roles each one plays in building construction [4]

D) The following is a single story building. Describe the type of foundation used and reason for the foundation type chosen. [7]

