

**COVENANT UNIVERSITY
NIGERIA**

*TUTORIAL KIT
OMEGA SEMESTER*

**PROGRAMME: BUILDING
TECHNOLOGY**

COURSE: BLD 121

DISCLAIMER

The contents of this document are intended for practice and leaning purposes at the undergraduate level. The materials are from different sources including the internet and the contributors do not in any way claim authorship or ownership of them. The materials are also not to be used for any commercial purpose.

BLD 121: INTRODUCTION TO BUILDING II

CONTRIBUTOR: DR: AMUSAN

- 1 List and describe at least four (4) functions of building walls.
- 3 Itemize different materials that could be used for wall construction in building.54 . What do you understand by the following terms: (a) building line (b) building set-backs(c)
5. What type of concrete is often referred to as engineering concrete
7. Technically describe what a concrete is.
9. List functions of at least four tools used in setting out for building works.
11. List factors to be considered in choosing suitable foundation for building work.
13. Define the concept “load bearing soil and non-load bearing soil” within the context of building construction.
15. State primary design concerns in foundation construction.
17. Describe different foundation types that could be used in building construction with relevant sketches.
19. List and explain different bonding system that could be used in wall construction .

ANSWERS

Question 1 (a) List and describe at least four (4) functions of building walls.

Answer:

Question 1 (a). The building wall (or building enclosure) is the physical separator between the interior and the exterior environments of a building. It performs the following functions:

- Support (to resist and transfer mechanical loads).
- Control (the flow of matter and energy of all types).
- Finish (to meet human desires on the inside and outside).

(a) Control function:

The control function is at the core of good performance, and in practice focuses, in order of importance, on rain control, air control, heat control, and vapor control.

- Control of rain is most fundamental, and there are numerous strategies to this end, namely, perfect barriers, drained screens, and mass / storage systems.
- Control of air flow is important to ensure indoor air quality, control energy consumption, avoid condensation (and thus help ensure durability), and to provide comfort.

- Control of air movement includes flow through the enclosure (the assembly of materials that perform this function is termed the air barrier system).
- Hence, air control includes the control of wind washing and convective loops.[citation needed]

b. Support Function:

The physical components of the envelope include the foundation, roof, walls, doors and windows. The dimensions, performance and compatibility of materials, fabrication process and details, their connections and interactions are the main factors that determine the effectiveness and durability of the building enclosure system.

c. Finish function:

It provides aesthetic effect. The combination of color and design feature of building provides satisfaction to the occupants of owner.

Q 3 Itemize different materials that could be used for wall construction in building 7.5Marks.

- i. Walling Materials
- ii. Bricks(from Adobe Clay)
- iii. Sandcrete Blocks
- iv. Concrete Blocks
- v. Timber
- vi. Plastic
- vii. Glass
- viii. Polystyrene(Hydraform polystyrene strips)
- ix. Stone(Ashlar walling)

Question 5 What do you understand by the following terms: (a) Building Line (b) Building Set-Backs(c) engineering concrete (d) concrete?

Answer: (a) Building Line : Building line is the alignment that building follows that enables the building arranged in an orderly manner without balcony and overhang of a building extend beyond building set-back line.

(b) Building Set-Backs: Building set-backs is the distance from the center of the road to the external wall of building. Its usually 1.8-2m from the center of the road. The set-backs often accommodate services lines like telephone, water, electricity e.t.c.

(c) Engineering concrete: This is a concrete formed through the mixing of cement, water and aggregates, usually used to cast building features meant to carry loads.e.g. columns, beams and slabs.

(d) Concrete: Concrete refers to the resultant mass that is formed when cement, coarse aggregate, fine aggregates and water are mixed in required proportions.

Question 9 Technically describe what Concrete is

Concrete is a solid mass made from mixture of Cement, Sand and Water which is often vibrated to remove the air voids.

It performs engineering purpose in building work. Concrete can be formed into Foundation, Beams, Collumn and Slabs.

Question 11 List and describe functions of at least four tools used in setting out for building works.

Answer:

The tools are: Builder square; Hammer: Wooden-Mallet, Wooden Peg, Profile wood, Line, Spirit level, Ranging pole, Tape(wool and steel tape)

Functions:

Builder square; For establishing corner pegs, for correct angles.

Hammer: Hammer is used in driving pegs into the ground and nail into the wooden profiles during setting out.

Wooden-Mallet: Hammer is used in driving pegs into the ground and nail into the wooden profiles during setting out

Wooden Peg: It is used to connect profiles together and used to form alignment along which excavation would be carried out.

Profile wood: Building space measurement are transferred unto the profiles, and profile provide anchor to lines along which excavation could be carried out.

Line: Used for marking and demarcating the width of spaces in building to aid excavation.

Spirit level, Tape(wool and steel tape): Used to determine verticality of the features constructed and taking measurement of spaces and features on profiles.

Ranging pole: for transferring measurement and used in benchmark measurement during set out.

Tape(wool and steel tape): Used for taking measurement of spaces and features on profiles.

Question 13 Highlight factors to be considered in choosing suitable foundation for building work.

Answer:

Choosing a kind of foundation depends on:

- a. the ground conditions.
- b. the groundwater conditions
- c. the site, the environment (the buildings nearby) the structure of the building
- d. Requirements:
 - i. structural requirements: safe, be able to carry the load of the building

- ii. constructional requirements: schedule, minimal resources, minimal cost

Question 15 Define the concept “load bearing soil and non-load bearing soil” within the context of building construction and state primary design concerns in foundation construction.

Answer:

- a. **Load bearing soil (strata):** The soil layer, which has sufficient load bearing capacity in relation to the chosen foundation type. Load bearing soil is the soil that has high bearing capacity to withstand incidental loads imposed on it. e.g. rock, densified soil layer.
- b. **Non Load bearing soil:** This could be referred to as the soil that did not have sufficient load bearing capacity in relation to the chosen foundation type.e.g clay soil, humus soil, loamy soil.e.t.c.

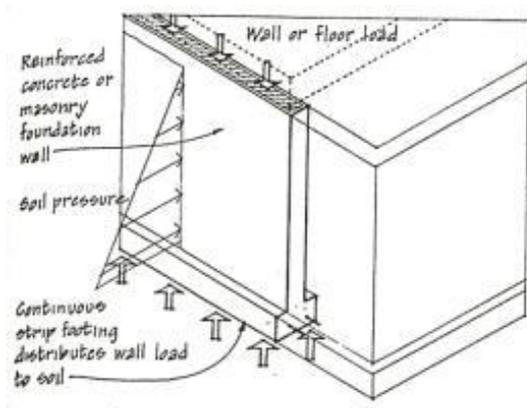
Question 17 State primary design concerns in foundation construction

Answer: The primary design concerns are settlement (total settlement and differential settlement) and load bearing capacity.

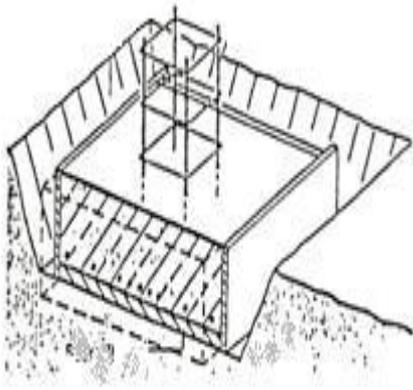
Question 19 Describe different foundation types that could be used in building construction with relevant sketches.

Answer:

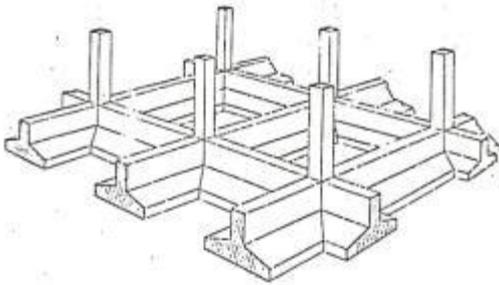
- i. strip foundation (wall footing)



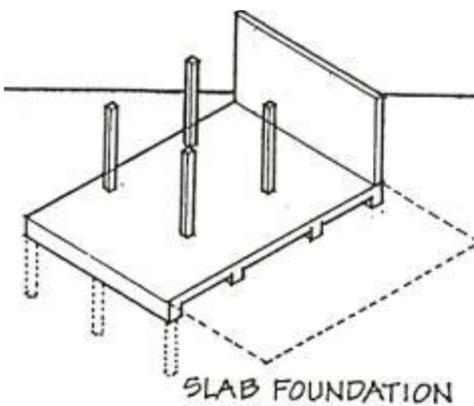
- ii. ii. pad foundation (beam)



iii. grillage foundation



iv. iv. mat foundation



EVEN NUMBERED QUESTIONS

Question 2 List and explain different bonding system that could be used in wall construction.

Question 4 Describe the process involved in wall construction with illustrations.

Question 6 Explain the following features in building (i) Damp proof Course (ii) Damp proof Membrane.

Question 8 List and explain different mortar mixes often used in brickwork. 7.5Marks

Question 10 What is a Mortar?

Question 12 Describe chemical composition of a mortar

Question 14 State the advantages of stacking Blocks in alternate courses while stacking.

Question 16 Describe procedure involved in building setting out process.

Question 18 Describe the functions of Damp proof Course and Damp Proof Membrane in building.

Question 20 What are the possible reasons for damp patches higher up inside the walls of a building?
And describe how the rising damp in walls could be prevented right from foundation construction stage.