THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATION COUNCIL

DIPLOMA IN TECHNICAL EDUCATION EXAMINATION

783 **BUILDING CONSTRUCTION**

Time: 3 Hour. **ANSWERS** **Year: 2002**

Instructions

1. This paper consists of sections **five (5)** questions.
2. Answer all questions.
3. Each question carries **twenty (20)** marks.
4. Non-programmable calculators may be used.
5. Communication devices and any unauthorized materials are **not** allowed in the examination room
6. Write your **Examination Number** on every page of your answer booklet.

1. (a) Define the term "preliminary works" in building construction.
Preliminary works refer to the preparatory activities carried out on a construction site before the main building operations begin. These tasks are essential to ensure that the site is ready, safe, and suitable for the construction process to proceed smoothly.

(b) (i) List three examples of preliminary works on a construction site.
One example is site clearance, which involves removing vegetation, debris, and obstructions from the area.

Another example is setting out, where the positions of foundations and other structures are marked on the ground.

The third example is fencing or hoarding the site to ensure safety and security of materials and equipment.

(ii) State two reasons why preliminary works are necessary before commencing major construction.
Preliminary works ensure that the site is free of obstructions and properly marked, which reduces the risk of errors during construction.

They also provide the essential groundwork and support systems such as access roads and water supply, which facilitate the smooth execution of subsequent tasks.

(c) Describe three consequences of skipping preliminary works on a building project.
Skipping preliminary works may result in incorrect positioning of the structure, leading to structural and legal complications.

It can also delay progress due to lack of access, water, or storage facilities for materials and equipment.

Furthermore, it may increase the risk of accidents or damage due to inadequate site preparation, such as unstable ground or unmarked utility lines.

2. (a) Explain the purpose of supervision in construction.
The purpose of supervision is to ensure that all construction activities are carried out according to the project's design, specifications, safety standards, and within the scheduled time and budget. Supervision helps in monitoring quality, progress, and resolving on-site issues promptly.

(b) (i) Identify four key duties of a site supervisor.
A supervisor is responsible for checking that construction work complies with drawings and technical specifications.

They monitor daily progress and ensure timelines are adhered to.

They also coordinate workers and subcontractors to maintain workflow and communication.

In addition, supervisors inspect the quality of workmanship and report problems or deviations to project managers.

(ii) State two benefits of proper supervision to project quality.
Proper supervision helps maintain a high standard of work by detecting errors early and ensuring corrective measures are taken.

It also ensures that the correct materials and techniques are used, preventing substandard outcomes.

(c) Mention three consequences of inadequate supervision in building construction.
Inadequate supervision can lead to poor quality construction due to unnoticed mistakes or use of wrong materials.

It increases the likelihood of accidents due to non-compliance with safety procedures.

Finally, it may cause project delays or cost overruns as a result of rework and miscommunication.

3. (a) What is concrete slump testing?
Concrete slump testing is a simple field test used to measure the consistency or workability of fresh concrete before it sets. It helps determine whether the concrete has the right amount of water and is suitable for the intended application.

(b) (i) State three reasons for conducting a slump test on site.
One reason is to confirm that the mix delivered to site meets the required workability for proper placement and compaction.

Another is to ensure consistency across different batches of concrete during pouring.

A third reason is to detect problems with the water-cement ratio or incorrect batching.

(ii) List two factors that affect the slump value of fresh concrete.
The water content in the mix has a significant effect—more water increases slump.

The type and grading of aggregates also influence slump, with coarse aggregates reducing workability.

(c) Describe three possible results of a slump test and their interpretations.
A **true slump**, where the concrete subsides evenly, indicates acceptable consistency.

A **shear slump**, where one side of the cone shears off, may suggest poor mix cohesion or improper proportions.

A **collapse slump**, where the concrete falls apart completely, shows that the mix is too wet and may lack strength.

4. (a) Define the term "building codes."
Building codes are a set of rules, standards, and regulations established by government authorities to ensure the safety, health, and welfare of the public during the design and construction of buildings.

(b) (i) Mention three key areas covered by building codes.
Structural requirements, such as load-bearing capacity and material strength, are addressed.

Fire safety measures, including exits, fire-resistance ratings, and alarms, are specified.

Sanitation and plumbing standards, including water supply and waste disposal systems, are also included.

(ii) Give two advantages of complying with national building codes.
Compliance ensures the building is structurally sound and safe for occupancy, reducing the risk of failure or disaster.

It also protects developers from legal liabilities and penalties due to code violations.

(c) Identify three challenges encountered in enforcing building codes in rural construction areas.
One challenge is the lack of trained personnel or inspectors familiar with code requirements in rural areas.

Another is limited awareness or education among local builders and clients about the importance of codes.

Additionally, enforcement may be weak due to resource constraints or lack of local government capacity.

5. (a) What is temporary work in construction?
Temporary works refer to structures or supports that are required during the construction process but are not part of the final permanent building. They are removed once their function is completed.

(b) (i) List four types of temporary works commonly used on construction sites.
Scaffolding is used to provide access and support for working at heights.

Formwork is used to shape concrete before it sets.

Shoring is applied to support unstable soil or existing structures.

Temporary access roads or ramps are used for movement of vehicles and equipment.

(ii) State two safety measures necessary when erecting temporary structures.
All temporary works should be designed by qualified personnel to ensure they can support the expected loads.

Regular inspection should be carried out to detect wear, damage, or improper assembly that could lead to collapse.

(c) Explain three problems that may occur if temporary works are poorly constructed or neglected.
Poorly constructed scaffolding can collapse, leading to serious injuries or fatalities.

Improper formwork may bulge or break during concrete placement, causing delays and material wastage.