THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATION COUNCIL

DIPLOMA IN TECHNICAL EDUCATION EXAMINATION

783 **BUILDING CONSTRUCTION**

Time: 3 Hour. **ANSWERS** **Year: 2004**

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 “construction delay” and state two common types of delay.
Construction delay refers to the interruption or extension of the project timeline beyond the originally scheduled duration. It occurs when planned tasks are not completed within the allocated time, affecting the overall progress and completion date.

One common type of delay is excusable delay, which is caused by factors beyond the control of the contractor, such as extreme weather, natural disasters, or government regulations.

Another type is non-excusable delay, which results from the contractor's own faults such as poor planning, lack of labor, or delayed procurement of materials. These delays are usually not compensated by the client.

(b) (i) Mention three causes of delays originating from the contractor.
One cause is lack of sufficient labor or skilled workers on the construction site, leading to slow progress in completing scheduled activities.

Another cause is poor site management and coordination, where tasks are not properly sequenced, and supervision is weak or inconsistent.

A third cause is failure to procure materials and equipment on time, resulting in work stoppages when required resources are unavailable.

(ii) Give two effects of construction delays on project stakeholders.
Construction delays can lead to increased project costs, as the client may need to pay more for extended site operations, labor, and equipment hire.

Delays can also cause legal disputes or damaged reputation, especially if the contractor fails to meet contract deadlines, affecting future business opportunities.

(c) Explain three strategies that can be used to minimize or manage delays on a construction site.
One strategy is developing a detailed and realistic construction schedule, which includes all activities, timelines, and dependencies, and is monitored closely throughout the project.

Another strategy is to ensure timely procurement of materials and proper logistics, so that critical items are delivered before they are needed on site.

A third approach is improving site supervision and communication, by assigning qualified personnel to oversee activities and ensure clear coordination between trades.

2. (a) What is a method statement in building construction?
A method statement is a document that outlines how a particular construction activity will be carried out safely and efficiently, detailing materials, procedures, personnel, tools, and safety controls required. It ensures consistent standards and helps prevent accidents or quality failures.

(b) (i) State four contents of a typical method statement.
It includes the scope of work, describing what activity will be performed.

It specifies the materials and equipment to be used during the operation.

It outlines the step-by-step procedures to be followed for completing the work.

It lists the safety measures and risk assessments, identifying hazards and how to control them.

(ii) Explain the importance of using method statements during execution of site works.
Method statements are important because they ensure consistency in work execution, reducing the risk of errors or shortcuts that may affect quality.

They also help in managing safety, as risks are identified in advance and measures are planned to mitigate them.

Additionally, they provide accountability and communication, ensuring that everyone involved understands the procedures and responsibilities.

(c) Identify three site activities that require the use of formal method statements.
Concrete pouring operations require method statements to control mix quality, curing, and placement sequence.

Excavation and trenching works need clear procedures due to the risk of collapse or accidents.

Waterproofing and roofing activities require method statements to ensure layer sequence and adherence to specifications.

3. (a) Define the term “sustainability” in construction.
Sustainability in construction refers to the practice of designing, constructing, and operating buildings in a manner that reduces environmental impact, conserves resources, and promotes long-term ecological balance. It focuses on energy efficiency, minimal waste, and use of renewable materials.

(b) (i) State three principles of sustainable construction.
One principle is energy efficiency, which aims to reduce the energy consumption of buildings through insulation, efficient systems, and passive design.

Another principle is resource conservation, which encourages the use of recycled, renewable, and low-impact materials.

A third principle is waste minimization, which involves designing to reduce material waste during and after construction.

(ii) Mention two ways in which building materials can be made more sustainable.
Materials can be made sustainable by using recycled content, such as fly ash in concrete or reclaimed wood for framing.

Another way is by using locally sourced materials, which reduces transportation emissions and supports local economies.

(c) Describe three environmental impacts of unsustainable construction practices.
One impact is deforestation and habitat destruction, caused by excessive use of timber and land clearing.

Another is air and water pollution, from dust, emissions, and runoff of chemicals and waste into natural systems.

A third impact is excessive waste generation, where poor material planning leads to landfills being filled with non-biodegradable construction debris.

4. (a) What is quality assurance (QA) in building construction?
Quality assurance is the systematic approach to ensuring that construction processes and outcomes meet defined standards and client expectations. It involves planning, documenting, and reviewing procedures to prevent defects before they occur.

(b) (i) List three differences between quality assurance and quality control.
Quality assurance is proactive, focusing on preventing defects, while quality control is reactive, focusing on detecting defects after they occur.

Quality assurance involves process planning, documentation, and staff training, while quality control involves inspection, testing, and measurement.

Quality assurance is the responsibility of project managers and supervisors, while quality control is mainly carried out by inspectors and technicians.

(ii) State two components of a quality assurance plan.
One component is the inspection and test plan (ITP), which outlines when and how inspections and tests will be conducted during construction.

Another is the material approval process, where all materials must be reviewed and approved before being used on site.

(c) Explain three benefits of implementing quality assurance systems on site.
Quality assurance improves client satisfaction, as the finished building meets or exceeds expectations in performance and durability.

It reduces rework and wastage, saving time and cost by getting things right the first time.

QA also enhances compliance with regulatory standards, reducing the risk of penalties or delays due to failed inspections.

5. (a) Define professional ethics in the context of construction practice.
Professional ethics in construction refers to the moral principles and standards that guide behavior and decision-making among professionals. It includes honesty, fairness, accountability, and respect in dealings with clients, workers, and the public.

(b) (i) List four ethical responsibilities of a construction supervisor.
A supervisor must ensure honest reporting of progress, safety incidents, and material usage.

They must treat workers fairly, regardless of background, and provide a safe and inclusive work environment.

They are expected to avoid conflicts of interest, such as awarding contracts to friends or personal benefit.

They should also protect the environment, following regulations and preventing practices that harm natural resources.

(ii) Give two consequences of unethical behavior in construction management.
Unethical behavior can lead to legal action or loss of licenses, especially in cases of corruption, fraud, or unsafe practices.

It can also cause reputational damage, where the company or supervisor is blacklisted by clients and industry partners.

(c) Describe three measures that can be taken to promote ethical conduct among construction workers.
Companies should provide training on ethics and workplace behavior, helping workers understand acceptable conduct.

There should be a clear code of ethics and consequences for violations, which is enforced consistently.

Open communication and whistleblower protection should be established, allowing workers to report unethical behavior without fear of retaliation.