



TECHNICAL UNIVERSITY OF MOMBASA

SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF ARCHITECTURE & BUILT ENVIRONMENT
UNIVERSITY EXAMINATION FOR:
DIPLOMA IN QUANTITY SURVEYING
EQS 2301: MEASUREMENTS IV
ORDINARY EXAMINATION
YEAR THREE SEMESTER I
SERIES: DEC2024
TIME: 2 HOURS
DATE: December, 2024

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other TWO questions.

Do not write on the question paper.

QUESTION ONE (30 MARKS) - COMPULSORY

Another male Kipchoge fan has just reclaimed land from the Indian Ocean. The reclaimed land is segment-shaped with the arc bending out to the sea and its chord along the coastline; and he wants it developed into a Recreation and Entertainment Centre.

In order to immortalize Eliud Kipchoge's 1.59 INEOS challenge of 2019 also, the reclaimed land is exactly 159 metres long and straight along the coastline; and bending out to the sea 72 metres at the furthest point thereby forming an arc 235.18 metres long.

The entire arc which is fronting the sea is to be constructed of a retaining walling in reinforced concrete 300mm wide at the top; and 1800mm wide at the bottom in contact with the base slab in foundation; and rising 7000mm high. The base slab which is to measure 2100mm wide and 1200mm deep in its entirety is also to be constructed in reinforced concrete. The retaining walling is centered over the base slab.

The 159-metre long side is to be constructed of masonry walling and columns on 600mm x 200mm strip foundation in reinforced concrete 1200mm below the existing ground level. The 300mm x 300mm buttressing columns are to be at 3000mm centres topped with a beam 300mm wide and 450mm deep all in reinforced concrete. The proposed height of the boundary walling is to be 3000mm from the existing ground level; and a 6000mm wide mild steel double-leaf gate is proposed at the middle.

The aggregated built-up area for the proposed recreation facilities, entertainment spots, offices and eateries; and underground water tanks is broken down as follows:

- ✓ Recreation facilities 518m²;
- ✓ Entertainment spots 492m²;
- ✓ Offices and eateries 1612m²;
- ✓ Underground water tanks 248m².

The remaining area is proposed to be built up as follows:

- ✓ Roads 22%;
- ✓ Parking 42%;
- ✓ Landscaping 24%;
- ✓ Storm water drainage 12%.

Using the information provided above, and while making realistic assumptions, prepare the Bills of Quantities for the retaining walling and boundary walling for tendering purposes (30marks)

QUESTION TWO (15 MARKS)

Using the information provided in Question 1 above, and while making realistic assumptions, prepare the Bills of Quantities for the roads, parking and landscaping works for tendering purposes.

QUESTION THREE (15 MARKS)

Prepare Bills of Quantities for electrical installations in a typical two-bedroom residential development for tendering purposes.

QUESTION FOUR (15 MARKS)

Prepare Bills of Quantities for plumbing and drainage installations in a typical two-bedroom residential development for tendering purposes.

QUESTION FIVE (15 MARKS)

Prepare Bills of Quantities for tendering purposes for works beyond the first manhole proposed for draining blackwater and greywater generated from a typical two-bedroom development where a public sewerage system is non-existent.