



TECHNICAL UNIVERSITY OF MOMBASA

SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF ARCHITECTURE & BUILT ENVIRONMENT
UNIVERSITY EXAMINATION FOR:
DIPLOMA IN QUANTITY SURVEYING
EQS 2104: MEASUREMENTS I
END OF SEMESTER EXAMINATION
YEAR ONE SEMESTER TWO

SERIES: APRIL 2022

TIME: 2 HOURS

DATE: APRIL, 2022

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.

The Board of Management at Tudor High School in Mombasa County has received a generous donation to construct 7No. new classrooms each measuring 8480mm long and 7380mm wide internally; and a 1480mm wide corridor/passage one step lower at the frontage.

The foundations are proposed to consist of 600mm x 200mm wide strip foundations in reinforced concrete under wallings; and 1000mm x 1000mm x 250mm pad foundations also in reinforced concrete under columns size 200mm x 200mm along the corridor (16No.). All foundations are to be 1350mm below existing ground level; and the corridor a step of 150mm below the classrooms level. The plinth at the corridor area is to be 150mm above the existing ground level.

The wallings enclosing the classrooms are proposed to be 2400mm high and topped with beam size 200mm and 400mm deep over all wallings; and even over all columns including beam sections demarcating the classrooms. The beams over partitioning and end wallings are all to extend over the corridor/ passage to connect with the beam over the columns at the same level.

Each classroom is to have 1No. 1200mm x 2400mm high door opening; and 5No. 1750mm x 1450mm high window openings.

The roofing is to be pitched at 30 degrees and hipped. The roof structure is to comprise timber trusses at 1800mm centres including hip rafters and ridge boards; and, complete with fascia boards and purlins. The roof covering is to be comprised of pre-painted box-profile roofing sheets complete with covers.

QUESTION ONE (30 MARKS) - COMPULSORY

Given that the classrooms are adjoined; and that the sub-wallings also cross the corridor/passage, measure the following items of work while making reasonable assumptions on reinforcements for tendering purposes.

- i) Cart away surplus excavated material; and Return, fill and ram (6marks)
- ii) Plinth finishes (6marks)
- iii) Column foundation: concrete, formwork and reinforcements (6marks)
- iv) Column starters: concrete, formwork and reinforcements (6marks)
- v) Sub-wallings (6marks)

QUESTION TWO (15 MARKS)

Measure all the concrete superstructure works while making reasonable assumptions on reinforcements for tendering purposes.

QUESTION THREE (15 MARKS)

- a) Measure the walling for tendering purposes (5marks)
- b) Specify the doors, windows and typical fittings for the proposed classrooms. (10marks)

QUESTION FOUR (15 MARKS)

Measure the entire roof structure and covering for tendering purposes.

QUESTION FIVE (15 MARKS)

Explain the following terms:

- a) Taking-off (3marks)
- b) Squaring (3marks)
- c) Abstracting (3marks)
- d) Billing (3marks)
- e) Bills of Quantities (3marks)