

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF THE BUILT ENVIRONMENT
DEPARTMENT OF QUANTITY SURVEYING
BACHELOR OF QUANTITY SURVEYING (HONOURS) DEGREE
PART IV SECOND SEMESTER EXAMINATIONS – 2012

MEASUREMENT IV-AQS4204

TIME: 3 Hours

Total Marks: 100

Instructions

Answer any **TWO** questions from **SECTION A** and any other **TWO** from **SECTION B**

SECTION A

QUESTION 1

What is the importance of Standards and Regulations in Electrical Installations?
[3 marks]

QUESTION 2

Briefly state and discuss:-

a) Factors that are considered when selecting the type(s) of wiring of a building.
[5 marks]

b) Dangers that emanates from the use of electrical installation and electricity.
[5 marks]

QUESTION 3

Fig 1 shows the Ground and First floor layout of a semi double storey building.

Stating all assumptions made

a) Illustrate through a sketch the wiring diagram of the following:-

i) Layout of the live conductor/wire for the lights circuits on Ground Floor.

- ii) Layout of the earth conductor/wire for the ground floor [15 marks]
[12 marks]

- b) Prepare for the First floor bill of quantities for conductor/wires and breakers required. [10 marks]

SECTION B

Instructions: Answer any two questions

QUESTION 4

Mechanical Areas of built environments are explained as all areas in central plant buildings devoted to mechanical services or equipment, either for the building itself or for services to other buildings, e.g. Mechanical rooms, Telephone and data network closets, Electrical rooms and Shaft spaces. The diagrams in Figure 3(a-c) represent the plan views of a three storey building, respectively at each floor level. The shaded areas represent the Mechanical Area of the building by floor, at each floor level. Using a scale of 1mm : 1m in physical measurements extraction, determine:

- (i) the gross floor space for the whole building [10 marks]
(ii) the Mechanical Area of the building by floor as a percentage of the gross floor space
for the whole three storey building. [15 marks]

QUESTION 5

You are part of the Whole Building Concurrent Design Team (WBCDT) engaged on the construction of a newly-to-be built up-market 150 bed private hospitals. Parts of your brief, as the lead quantity surveyor on the project, include consideration and recommendation of a sustainable, sustainable and cost-effective Fire Protection and Fighting system for installation on the new complex. As part of the design team it is your brief to advise the proprietors and your colleague design teammates (architects, structural engineers, electrical engineers, e.t.c) on the most appropriate Fire Protection and Fighting system to install. Provide a concise account of your convincing presentation to the WBCDT.

Your account should address, among other issues, the following: State the major types of Fire Protection and Fighting systems used in buildings, what are the advantages and disadvantages of the respective systems you have sited, with the aid of typical practical examples explain the main functional environments of the Fire Protection and Fighting Systems proposed for installation on the buildings complex. Present, as a case example, one type of Fire Testing Method which may be used to test a type of Fire Proofing material to be used on the project and indicate the Fire Testing measured parameters. **[25 marks]**

QUESTION 6

(a) Briefly discuss the General rules for duct designing in Air-conditioning systems installation. **[6 marks]**

(b) Figure QU6(b) shows a duct layout for part of the Air Conditioning System of a proposed School of Disaster Management Complex at the National University of Science and Technology. The key linear measurements, which represent the centre lines of the 0.6 m x 0.6 m square cross-section duct outline, are indicated on the diagram. The arc radii are 1 m. The duct outline is made of 0.5 mm thick Galvanised Sheet Steel which normally is supplied as standard Flat Sheets measuring 2400 mm x 1200 mm. Compute, for the outline shown including the stated desired radii sizes:

(i) The quantity of galvanised sheet material required for the project **[11 marks]**

(ii) The cost of the galvanised sheet material required for the project if sheet material costs US\$210.00/Sheet **[8 marks]**