

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF THE BUILT ENVIRONMENT
DEPARTMENT OF QUANTITY SURVEYING
PART IV SECOND SEMESTER EXAMINATIONS – JUNE 2010
MEASUREMENT IV-AQS4204

Time: 3 Hours

Total Marks: 100

Instructions

Answer all questions in **SECTION A** and any other **TWO** in **SECTION B**

SECTION A

QUESTION ONE

- a) Briefly explain factors that are considered when selecting a cable (5 marks)
- b) What is diversity factor? (2 marks)
- c) State the reasons why the load in an installation is divided into sub circuits (3 marks)

QUESTION TWO

Three light points in a room uniformly spaced, each controlled by one way switch are to be wired. All switches are to be placed on one position

Draw the following

- a) Schematic diagram (5 marks)
- b) Wiring diagram in multiline representation (5 marks)

QUESTION THREE

Figure (1) shows the floor layout plan of a residential house. The house is to be provided with electrical connections and the position of the lights, switches; power socket outlets and distribution board (D/DB) are as shown in the diagram.

Assuming the following;

- a) Height of batten above the floor level =2.5m
- b) Height of switches above the floor level=1.3m

- c) Height of distribution board above the floor=1.5m
- d) 100 watts load for each light point
- e) 1000 watts load for each power socket outlet
- f) Power socket outlets installed 300mm above the floor.

Stating any additional assumptions made:

- 1) Decide the number of sub circuits required and illustrate these on the floor layout plan (15 marks)
- 2) Prepare a bill of quantities for major materials (wires, breakers and conduits) required for the wiring system. (15 marks)

SECTION B

Instructions: Answer any two questions

QUESTION FOUR

Discuss the strategies used for fire protection and fire fighting in built environments (25 marks)

QUESTION FIVE

- (i) Explain the significance of transportation systems in built environments. (5marks)
- (ii) What are the determining factors taken into consideration when selecting a transportation system for installation on a built environment project? (8 marks)
- (iii) Write brief notes about any three (3) transportation systems used on built environments (12marks)

QUESTION SIX

Suppose you are a team member representing your profession on the whole Building Design Group team working on a proposed construction project in the Greater Bulawayo metropolitan city centre. One aspect the project design team would be focusing on in their next meeting is the proposed air-conditioning system for the proposed project. Write a brief report which you would present to the project design team, as the lead designer in this respect. The report needs to explain, for the benefit of the other design team members, how a basic air conditioning system works; types from which the air conditioning system may be selected (merit/demerits); considerations and computations that need to be made in determining the size of the air conditioning system; features to check when your buyer goes to procure the air conditioning system as well as addressing installation and location issues.

(25 marks)

QUESTION SEVEN

(a) Explain the following terminology as used in HVAC systems:

(i) Air conditioning (3 marks)

(ii) Thermal comfort

(iii) Factors affecting thermal comfort (4 marks)

(b) (i) PFP and AFP. (2 marks)

(ii) When do you apply each system in selecting a protection system for a building? (4 marks)

(iii) What is meant by the term fire resistance rating? (1 mark)

(c)(i) With the aid of well labelled sketches explain the key measurements and safety features that should imperatively be provided on a building elevator system. (5 marks)

(ii) How would you design energy economisation into an escalator system of a multi-story building? (4 marks)

END OF EXAMINATION