TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering and Technology

DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

UNIVERSITY EXAMINATION FOR:

DIPLOMA IN ELECTRICAL ELECTRONICS ENGINEERING (DEEE 2)

ELECTRICAL INSTALLATION TECHNOLOGY & PRACTICE I

EEP 2105

END OF SEMESTER EXAMINATION

SERIES: MAY 2016

TIME: 2 HOURS

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 any THREE Questions.
Do not write on the question paper.

PAPER ONE

QUESTION ONE

a) i) Describe with the aid of a diagram the operation of trembler bell **(5marks)**

ii) Explain how a relay works and state where they are used **(3marks)**

b) i) Describe with the aid of a diagram how a closed circuit alarm system operates **(5marks)**

ii) States the advantages of system in b (i) above over the open circuit type. **(3marks)**

c) Explain the application of the indicator board with alarm systems stating its function and one example where it is commonly used. **(4marks)**

QUESTION TWO

a) Define the following terms
   i) Conductor
   ii) Insulation
   iii) Cable
   iv) Fuse
   v) Joint box
   vi) Consumer unit
   vii) Motor **(8marks)**

b) Draw the BS graphical symbols for the following Electrical items
   i) Lamp
   ii) Filament lamp
   iii) Fuse
   iv) Earth
   v) Socket outlet
   vi) Intermediate switch
   vii) Bell
   viii) Transformer
   ix) Battery
   x) Rectifier **(10marks)**

c) i) Use the numerical progression in building cables and determine the number of conductor for a five layer standard cable. **(2marks)**

QUESTION THREE

a) i) Define the term wiring system **(2marks)**

ii) State **THREE** types of wiring systems usually used in domestic Installations **(3marks)**

b) Explain **FOUR** factors to be considered when choosing the types of wiring system. **(4marks)**

c) State :
   i) Any **TWO** factors which determine the degree of danger of an electric shock.

(2marks)

ii) Any **TWO** basic earthing regulation requirements to be satisfied if an electrical installation is to be deemed safe. **(2marks)**

iii) Any **THREE** earthing tests recommended for a just completed domestic installation to ensure effectiveness of the earthing arrangement. **(2marks)**

d) With the aid of a labeled diagram, explain the protective multiple earthing system for a single phase distribution, starting from the supply transformer.

(5marks)

QUESTION FOUR

a) State :
   i) **SIX** commonly used accessories **(3marks)**
   ii) **TWO** IEE regulations regarding the use of ceiling roses. **(3marks)**

b) Define :
   i) Switch
   ii) Socket outlet
   iii) Accessory
   iv) Consumer unit **(4marks)**

c) With the aid of diagram show the sequence of control equipment at the domestic consumer's intake with Ring circuit with a spur. **(4marks)**

d) Draw writing diagrams to show how two lamps may be controlled using.
   i) **TWO** ,two- way switches **(3marks)**
   ii) **TWO**, two-way switches and an intermediate switch **(3marks)**

QUESTION FIVE

a) State :
   i) Any **FOUR** types of materials for insulating domestic cables. **(2marks)**
   ii) Any **FOUR** types of materials used for sheathing domestic installation cables. **(2marks)**

b) Define :
   i) Resistance area of an earth electrode **(2marks)**
   ii) Earth fault loop impedance. **(2marks)**

c) i) State any **THREE** materials which may be used to improve the resistance at the earth electrode position. **(3marks)**

ii) Describe how the materials may be applied at earth electrode to improve the resistance of the earth electrode area. **(3marks)**

d) i) State **TWO** disadvantages of using PVC as an insulator. **(2marks)**

ii) Describe how catenary type of wiring system can be done between buildings, to install; a sheathe red cable,(aided by a sketch) **(4marks)**