TECHNICAL UNIVERSITY OF MOMBASA

Engineering

Electrical Department

UNIVERSITY EXAMINATION FOR:

EEE2110: WORKSHOP PRACTICE 2

END OF SEMESTER EXAMINATION

SERIES: MAY 2016

TIME: 2HOURS

DATE:MAY 2016

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **five** Questions; Question ONE is compulsory. In addition attempt any Other TWO Questions.

Do not write on the question paper.

Question ONE (Compulsory 30 marks)

Qn1 (a) (i) Define a final sub circuit and explain the difference between a point and a final sub circuit **(2marks)**

(ii) State EEE regulations 27(a)(i) governing final sub circuits and their significance in electrical installation work **(2marks)**

(iii) With aid of a sketch illustrate 3 different methods of connecting distribution fuse boards **(5mks)**

(b) Sketch electrical symbols for the following installation equipments

(i) Distribution board **(2mks)**

(ii) Consumer Control Unit (**2mks)**

(iii) Socket out let **(2mks)**

(iv) Two way switch **(2mks)**

(vi) Intermediate switch **(2mks)**

(c) Draw the circuit diagrams for the following;

(i) Two lamps controlled by 2 one way switches fed through consumer control unit **(3marks)**

(ii) Four lamps controlled by 2 two way switches fed through consumer control unit. **(3marks)**

(iii) Three lamps controlled by 2 two way switches and an intermediate switch fed through the consumer control unit **(3marks)**

(iv)Two lamps controlled from more than three positions **(3mks)**

Question TWO

Qn2 (a) Describe the following wiring systems stating their application, advantages, disadvantages and any three accessories used with the system.

(i) PVC (polyvinyl chloride sheathed) cable **(2mks)**

(ii) Flexible conduit**(2mks)**

(iii) Steel class B conduit**(2mks)**

(iv) PVC class B conduit **(3mks)**

(b) An installation is to consist of three lamps controlled by two way switches and a one way switch. The one way switch is to act as a master switch. Four socket outlets three connected in ring and the fourth a spur all done in steel class B conduit system

(i) List the material required **(2mks)**

(ii) Draw the circuit of the system **(3mks)**

(iii) Describe how you will carry out the installation **(3mks)**

(iv) State TWO tests that can be carried out on the complete installation before its powered **(2mks)**

Question THREE

Qn3 (a)(i) State the FIVE types of final sub circuits **(3mks)**

(ii) Explain why circuit fuses must not exceed the rating of the smallest flexible cord in the circuit **(2mks)**

(iii) A cooker is rated at 12KW and supplied from 240V. Find the rating of the circuit cable for this cooker **(3mks)**

(b) Explain the following terms used in connection with fuse

(i) Current rating **(2mks)**

(ii) Fusing current **(2mks)**

(iii) Fusing factor **(2mks)**

(c) An installation is to be carried out using PVC class B conduit system. It consists of the following final sub circuits.

- A cooker control unit circuit
- A lighting circuit made of 4 Lamps. The lamps are controlled by three two way switches X, Y AND Z. Switch Y acts as a slave of switch X and Z and one position it switches lamps 1 and 2 and at the other position it switches lamps 3 and 4

(i) List the material and accessories required for the installation**(2mks)**

(ii) Draw the circuit diagram for this installation **(4mks)**

(iii) Describe how the installation can be carried out **(2mks)**

Question FOUR

Qn4 (a) (i) With aid of describe the construction of a high breaking capacity fuse **(4mks)**

(ii) Describe miniature circuit breaker and state TWO of its advantages **(4mks)**

(iii) Explain the term “luck of discrimination” as used in re-wirable fuse. **(2mks)**

(b) State regulation IEE A10 which governs all sub circuits on fuse rating for final sub circuit and state TWO exceptions to this rule. **3mks**

(c) An installation is to be done on PVC sheathed system consisting of the following final sub circuits.

- 4 lighting points controlled by 2 two way switches and an intermediate switch
- A fluorescent fitting
- 3 socket outlets wired in ring main

(i) List the materials and accessories required for this installation **(1mk)**

(ii) Draw the circuit diagram for this installation **(4mks)**

(iii) Explain steps to be carried out to complete the installation **(2mks)**

Question FIVE

Qn5(a)(i) Explain the main purpose of testing an installation and state FOUR factors which an installation need to be protected from **(5mks)**

(ii) Describe the main purpose of verification of polarity test and with aid of a circuit diagram explain how the test is done and results expected. **(5mks)**

(iii) With aid of a circuit diagram describe insulation resistance test on a complete installation **(5mks)**

(b) (i) Describe Tinning and plating as used in industrial production

(ii) Explain the process of assembling a simple transistor radio using a braid board **(5mks)**