TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering and Technology

DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING
Faculty of Engineering and Technology

DIPLOMA IN TECHNOLOGY
ELECTRICAL POWER ENGINEERING

EEP 2105: ELECTRICAL INSTALLATION TECHNOLOGY AND PRACTICE I

END OF SEMESTER EXAMINATION

SERIES: DECEMBER 2016

TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES:

1. You should have the following for this examination
   - Answer booklet
   - Electronic calculator
   - Student ID
   - Examination pass
2. This paper consists of FIVE questions.
3. Answer ANY THREE questions.
4. All questions carry equal marks.
5. Do not write on the question paper
   This paper consists of THREE printed pages

PAPER ONE

QUESTION ONE

a) (a) (i) Define a final circuit

(ii) State the **FIVE** classes of final circuit

(iii) Explain diversity and state **TWO** advantages of the application of diversity factor in installation design. (10mks)

(b) (i) State **FOUR** disadvantages of rewirable fuses

(ii) State **FOUR** advantages of HBC fuse

(iii) State **FOUR** advantages of circuit breakers (12mks)

(c) Define the following with reference to protection

(i) Current rating

(ii) Fusing factor (4mks)

(d) (i) State the essence of accident investigation

(ii) State the dangerous effects of noise and the factors determining its degree of danger (4mks)

QUESTION TWO

b) (a) Describe **FOUR** properties required of circuit protective devices (8mks)

(b) Explain the significance of inverse time current characteristics in circuit protection (3mks)

(c) State the name and purpose of the filing in the cartridge barrel of HBC fuse. (3mks)

(d) With the aid of a diagram, explain the operation of a thermal tripping circuit breaker. (6mks)

QUESTION THREE

c) State

(i) Six commonly used accessories

(ii) Two IEE regulations regarding the use of ceiling Roses

d) Define;

(i) Switch

(ii) Socket outlet

(iii) Accessory

(iv) Consumer unit (4mks)

e) With the aid of a diagram show the sequence of control equipment at the domestic consumer's intake point with a ring circuit with a spur. (4mks)

f) Draw wiring diagrams to show how two lamps may be controlled using:-

(i) Two, two-way switches (3mks)

(ii) Two, two-way switches and an intermediate switch (3mks)

QUESTION FOUR

(a) (i) Define the term wiring system (2mks)

(iii) State **THREE** types of wiring systems usually used in domestic installations. (3mks)

(b) Explain **FOUR** factors to be considered when choosing the type of wiring system (4mks)

(c) State

(i) Any two factors which determine the degree of danger of an electric shock. (2mks)

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

(iii) Any three earthing tests recommended for a just completed domestic installation to ensure effectiveness of the earthing arrangement. (3mks)

(d) With the aid of a labeled diagram, explain the for protective multiple earhing (PME) system of earthing for a single phase distribution starting from the supply transformer (4mks)

QUESTION FIVE

a. State;-

i. Any four types of materials used for insulating domestic cables (2mks)

ii. Any four types of materials used for sheathing domestic installation cables(2mks)

b. Define;-

i. Resistance area of an earth electrode (2mks)

ii. Earth fault loop impedance (2mks)

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

(iii) Describe how the materials may be applied at the earth electrode to improve the resistance of the earth electrode area. (3mks)

d. (i) State two disadvantages of using PVC as an insulator. (2mks)

(ii) Describe how catenary type of wiring system can be done between buildings, to install a sheathed cable, (aided by a sketch). (4mks)