



**UGANDA INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY  
WEEKDAY PROGRAMME END OF SEMESTER TWO EXAMINATIONS**

**ACADEMIC YEAR 2018/2019**

**DEPARTMENT:** ICT

**SEMESTER:** ONE

**PROGRAMME(S):** DIPLOMA IN TELECOMMUNICATIONS TECHNOLOGY (DTE)  
DIPLOMA IN ELECTRONICS ENGINEERING (DEEE)

**YEAR OF STUDY:** ONE

**COURSE:** ELECTRICAL & ELECTRONIC WORKSHOP PRACTICE

**COURSE CODE :** ELT1202

**DATE:** WEDNESDAY 6<sup>TH</sup>, DECEMBER 2018

**TIME:** 9:00 AM – 12:00 NOON

**DURATION:** 3 HOURS

**INSTRUCTIONS:**

- (i) This paper contains two Sections: A (40 marks) & B (60 marks).**
- (ii) Attempt ALL questions in Section A, and ONLY THREE questions in Section B.**
- (iii) All questions in Section B carry equal marks.**
- (iv) Credit will be given for use of relevant examples and illustrations.**
- (v) Begin each number in Section B on a new page of the answer sheet.**
- (vi) DO NOT write on this question paper.**



**SECTION A (40 MARKS)**

1. For each of the Questions below choose the best alternative from these:
  - A. Always True    B. Always False    C. Sometimes True    D. None of these
  - (a) An intermediate switch has three terminals used for termination.
  - (b) There is no problem measuring resistance even when the circuit is energized.
  - (c) ICTP switch is used on a voltage of 240V while ICDP switch is used on a voltage of 415V.
  - (d) The clamp-on ground tester performs a stakeless test without disconnecting the ground.
  - (e) A soft solder has a maximum melting point of 450°C. **(5 marks)**
  
2. For each of the Questions below choose the best alternative from those given:
  - (a) Which hand tools would you use for removing cable insulation?
    - A. a pair of side cutters    B. a chisel    C. a screwdriver    D. a saw
  - (b) You should only attack a fire with a fire extinguisher if
    - A. it is burning brightly    B. you can save someone's life.
    - C. you can save someone's property.    D. you can do so without putting yourself at risk.
  - (c) In Uganda, electricity is distributed to domestic installations at:
    - A. 240 V    B. 11 Kv    C. 415 V    D. 132 kV
  - (d) A current which exceeds the rated value in an otherwise healthy circuit is one definition of:
    - A. earthing    B. overload    C. bonding    D. short circuit
  - (e) An electricity supply in which the protective and neutral functions are combined is called:
    - A. IT system    B. TN-C-S system    C. TN-S system    D. TT system.
  - (f) An over-current resulting from a fault of negligible impedance is one definition of:
    - A. earthing    B. overload    C. bonding    D. short circuit.
  - (g) An electricity supply in which the earthing arrangements must be provided by the consumer is called .....
    - A. IT system    B. TN-C-S system    C. TN-S system    D. TT system
  - (h) Which of the following fixing methods would be suitable for holding a PVC insulated and sheathed cable on to a wood surface?
    - A. Cable clip    B. Screw fixing to plastic plug
    - C. Rawl bolt    D. Spring toggle
  - (i) Identify from the list below the test which is used to verify that all fuses, circuit breakers and switches are connected in the line conductor
    - A. Continuity test    B. Functional test
    - C. Earth fault loop impedance    D. Polarity test
  - (j) The main lighting circuit in a room having only one entrance would probably be:
    - A. Pull switch control    C. One-way switch control
    - C. Intermediate switch control    D. Two-way switch control **(10 marks)**
  
3. For each of the Questions below write short answers.
  - (a) What is meant by PPE? **(1 mark)**
  - (b) State **five** pieces of PPE which an electrician could be expected to wear at work and the protection given by each piece. **(5 marks)**
  - (c) What is the difference between a circuit overload and a short circuit? **(2 marks)**
  - (d) Slips, trips and falls are the most common cause of accidents at work.
 

Give any **two** things you should do in order to reduce the possibility of an accident being caused by a slip, trip or fall in a work environment? **(2 marks)**
  - (e) List down **four** characteristics of materials that are used as fuse elements. **(4 marks)**

## ELT1202 ELECTRICAL & ELECTRONIC WORKSHOP PRACTICE

- (f) What is an SPDT switch? **(2 marks)**
- (g) List down any **six** accessories that are used together with PVC conduits in electrical installation. **(3 marks)**
- (h) A cable has been labelled as 7/20 cable. What does this mean? **(2 marks)**
- (i) Distinguish between a soldering iron and a soldering gun. **(3 marks)**
- (j) Sketch a graph to show the effect of salt on soil resistivity as encountered in electrical installation. **(1 mark)**

### SECTION B [60 MARKS]

Attempt **ONLY THREE** Questions in this Section.

#### Question 1

- (a) Define the term Earthing when used in relation to electrical installations. **(2 marks)**
- (b) Give any **two** reasons why earthing is important in a domestic installation. **(2 marks)**
- (c) Explain why earthing must be used in conjunction with another protective device, for example, a miniature circuit breaker. **(3 marks)**
- (d) State and explain any **two** reasons why obtaining the fault current value of an earthing system is important. **(4 marks)**
- (e) Give a brief description of the three earthing systems used with domestic installations according to the IEE regulations. **(6 marks)**
- (f) State typical earth resistance values expected if each of the systems is correctly setup. **(3 marks)**

#### Question 2

- (a) What is the difference between a miniature circuit breaker (MCB) and a residual current device (RCD)? **(2 marks)**
- (b) Why is it advisable to wear shoes with rubber soles whenever one is working with electricity. **(2 marks)**
- (c) Explain the steps, that you would take in order to assist someone who is receiving an electrical shock from a fallen distribution cable by the road side. **(4 marks)**
- (d) Explain the difference between a ring circuit and a radial circuit, and give situations when it would be advisable to use each circuit. **(4 marks)**
- (e) In a given building, there is a room with 4 entrances. The owner would like to put one electric lamp in the room, but with separate switches to control it from each of the entrances. If one switches on the light from one entrance and leaves the room, another person can switch it off from a different entrance.
  - (i) Draw a circuit diagram of how this can be accomplished. **(5 marks)**
  - (ii) Explain how this circuit would operate. **(3 marks)**

#### Question 3

- (a) (i) What is meant by the term soldering?
  - (ii) What is the use of flux during soldering? **[2 marks @] (4 marks)**
- (b) State and explain:
  - (i) any **two** reasons why soldering is used in making electrical joints **(4 marks)**
  - (ii) any **three** qualities of poor solder joints. **(6 marks)**
- (c) Explain the function of the following tools:
  - (i) Lineman's Pliers (ii) Phase Tester (iii) Screw-drivers **[2 marks @] (6 marks)**

**Question 4**

- (a) What is the requirement of a good electrical joint? **(2 marks)**
- (b) Why is acid core solder not recommended for electronics work? **(2 marks)**
- (c) Briefly explain the various operations to be performed when making a joint. **(6 marks)**
- (d) By use of simple diagrams, state and explain **five** types of joints. **(10 marks)**

**Question 5**

- (a) What is an electric shock? **(1 mark)**
- (b) List down four effects of electric shock. **(4 marks)**
- (c) Explain the conditions that are favourable for fire to exist using a fire triangle. **(3 marks)**
- (d) By use of suitable examples, distinguish between the different classes of fire. **(8 marks)**
- (e) Describe any four types of fire extinguishers and the class of fires that they extinguish. **(4 marks)**

**END**