

**UGANDA INSTITUTE OF
COMMUNICATIONS
END OF YEAR ONE SEMESTER**



**INFORMATION AND
TECHNOLOGY
TWO EXAMINATIONS FOR AY**

2022/2023

ICT AND ENGINEERING DEPARTMENT

PROGRAMME(S): DIPLOMA IN ELECTRICAL AND ELECTRONICS (DEEE)

YEAR OF STUDY: ONE

COURSE: ELECTRICAL AND ELECTRONICS WORKSHOP PRACTICE

COURSE CODE : ELT122

DATE: SATURDAY 5TH, AUGUST 2023

TIME: 2:00 PM – 5:00 PM

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]

Attempt **ALL** the Questions in this section

SECTION A I

Write the correct alternative in the answer booklet provided (1 mark @)

1. Domestic electrical wiring is basically a
 - A. Series connection
 - B. Parallel connection
 - C. Parallel and Series connection
 - D. Series in rooms and parallel elsewhere
2. What are the types of cables used in low voltage wiring?
 - A. Vulcanized Indian Rubber
 - B. Tough Rubber Sheathed
 - C. Polyvinyl Chloride insulated cables
 - D. All of the above
3. To make an extension in the earth conductor the most suitable joint is:
 - A. Brittanias
 - B. Married joint
 - C. Western joint
 - D. Scarfed joint
4. The type of conductor used in the Cleat wiring system is
 - A. XLPE cable
 - B. Multi-strand cable
 - C. PVC and VIR
 - D. Any of the above
5. Which of the following types of wiring is preferred for workshop
 - A. Casing Capping
 - B. Batten wiring
 - C. Concealed conduit wiring
 - D. Surface conduit wiring
6. In an electric line, a switch is connected to which of the following wire?
 - A. Earth
 - B. Phase
 - C. Neutral
 - D. Not connected
7. Factors Affecting the Choice of Wiring system
 - A. Durability
 - B. Appearance
 - C. Cost
 - D. All the above
8. What is the domestic wiring electrical layout?
 - A. A list or a plan of a building providing the first location of different points
 - B. The list of type of wiring
 - C. The list of all the electrical components along with their prices.
9. Power dissipated in a pure capacitor is
 - A. Minimum
 - B. Maximum
 - C. infinite
 - D. infinite
 - E. zero

ELECTRICAL AND ELECTRONICS WORKSHOP PRACTICE

10. Sheath is used in the cables to
 - A. Prevent the moisture from entering the cable
 - B. Provide strength to the cable
 - C. Avoid the chances of rust on the stands
 - D. Provide proper insulation
11. Which factor does not affect the type of electrical cable to be installed
 - A. Temperature
 - B. Conductor size
 - C. Colour code
 - D. Weather
12. A capacitor and an inductor are connected in separate ac circuits. The bulb glows more brightly when-----
 - A. Separation of plates is increased
 - B. Dielectric is introduced into the gap between the plates
 - C. An iron rod is introduced into the inductance coil
 - D. The number of inductor turns
13. The resistance of an inductor is
 - A. High
 - B. Low
 - C. infinite
 - D. Definite
14. The Mark on Non-Polarized Capacitors is “104”. What is the value of Capacitor?
 - A. 104 μ F
 - B. 10000 μ F
 - C. 1000nF
 - D. 100000pF
15. Capacitor blocks DC voltage and passes AC voltage.
 - A. TRUE
 - B. FALSE
16. Leads of all capacitors are polarised.
 - A. TRUE
 - C. FALSE
17. A capacitor works in an-----
 - A. Electric field
 - B. Magnetic field
 - C. Both A and B
 - D. None of those
18. Capacitors are used in electric power supply system to-----
 - A. Improve power factor
 - B. Reduce line current
 - C. Provide voltage stability
 - D. All of these
19. In a 6 band colour code, what does the 6th band represent?
 - A. Temperature Coefficient
 - B. Multiplier
 - C. Tolerance
 - D. None of these
20. Soldering is done on wire joints to improve
 - A. Conductivity
 - B. Bonding strength
 - C. Ductility
 - D. Tensile strength

SECTION AII

21. State three reasons why earthing is required in electrical power systems
(3 marks)
22. State one function of a mains switch
(1 mark)
23. Identify four factors that affect earth's resistance
(4 marks)
24. State one importance of an electrical diagram
(2 marks)

ELECTRICAL AND ELECTRONICS WORKSHOP PRACTICE

- 25. Identify two requirements of electrical cable insulation (4 marks)
- 26. State one use of earth rod (1 mark)
- 27. Distinguish a circuit diagram from a block diagram (2 marks)
- 28. Differentiate earthing from bonding (2 marks)
- 29. Explain why a moist mixture of charcoal and salt is used during the earthing process. (1 mark)

SECTION B [60 MARKS]

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

Question 1

- a) Define the following terms as used in electrical protection (2 marks @)
 - i) Fuse
 - ii) Draw a block diagram of one-way switch
 - iii) Draw a circuit diagram of one-way switch controlling one lamp
- b) Draw a block diagram of two way and intermediate switch. (6 marks)
- c) With help of a diagram, explain how a two-way switch and intermediate work (8 marks)

Question 2

- a) Explain the functions of the following electrical devices (2 marks @)
 - i) Circuit breaker
 - ii) Energy meter
- b) Using neat sketches, explain the supply of sequence control in electrical works (6 marks)
- c) With aid illustrations, explain functions of the following circuits (5 marks @)
 - i) Two-way switches controlling one lamp
 - ii) Two-way switches and intermediate controlling one lamp.

Question 3

- a) Describe the following terms in connection with earthing (2 marks @)
 - i) Earthing
 - ii) Earth electrode
 - iii) Extraneous metalwork
- b)
 - i) Define system earthing (2 marks)
 - ii) State **three** types of system earthing (3 marks)
 - iii) List **two** advantages of TNCS type of earthing (4 marks)
- c) State any **five** IEEE electrical wiring regulations (5 marks)

Question 4

- a) State **four** factors you would consider in selecting cables for electrical installation (4 marks)
- b) With aid of diagrams, explain three types of electrical joints (6 marks)
- c) Explain **three** different types of high voltage cables (6 marks)

ELECTRICAL AND ELECTRONICS WORKSHOP PRACTICE

- d) State **four** advantages of a ring circuit over radial circuit **(4 marks)**

Question 5

- a) State **four** types of electrical hand tools **(4 marks)**
- b) As a workshop technician, explain four types of electrical injuries/accidents that may occur in the lab. **(8 marks)**
- c) List **four** types of fire extinguishers **(4 marks)**
- d) Explain any **four** causes of electrical fires **(4 marks)**