



PAC INSTITUTE OF TECHNOLOGY AND SOCIAL STUDIES MAY – AUGUST 2025 ASSESSMENT

FORMATIVE ASSESSMENT

Qualification : Computer Science Level 6
Code : ICT/CU/CS/CC/01/6/A
Unit of Competency : APPLY BASIC ELECTRONIC SKILLS

WRITTEN ASSESSMENT TIME: 3 HOURS

INSTRUCTIONS TO THE CANDIDATE:

- 1. Read all the instructions carefully before attempting the questions.*
- 2. This paper consists of two sections, A & B.*
- 3. You are allowed 3 Hours to Answer the questions.*
- 4. Marks for each question are indicated in brackets.*
- 5. Write your responses in the Separate Answer booklet provided.*
- 6. Do not write anything on this question paper.*

SECTION A: (40 MARKS)

*Answer **ALL** questions in this section.*

1. Define an electrical circuit. (2 Marks)
2. Outline **two** basic electrical quantities and their SI units (4 Marks)
3. Define a semiconductor and give one example of a semiconductor material. (4 Marks)
4. Convert the decimal number **2310** to its binary equivalent (4 Marks)
5. Differentiate between **RAM** and **ROM** (4 Marks)
6. Differentiate between a simple **A.C. circuit** and a **simple D.C. circuit** (4 Marks)
7. What is **forward biasing** in a P-N junction diode? (2 Marks)
8. Perform the binary addition: **10112+01012** (4 Marks)
9. Highlight **two** classifications of memories based on access method (4 Marks)
10. Identify **two** passive electronic components and state their primary function. (4 Marks)
11. Describe the difference between **P-type** and **N-type** semiconductor materials. (4 Marks)
12. Describe the main characteristic of a capacitor in a D.C. circuit (2 Marks)

SECTION B: (60 MARKS)

Answer any **THREE** questions in this section.

13.

- a) Explain the concepts of electrical circuits, including the definition, basic electrical quantities (E.m.f, Current, Power, Energy, Resistance) and their units. (10 Marks)
- b) Describe the different types of electrical circuits (simple A.C. and D.C. circuits). Draw and label a simple series D.C. circuit and a simple parallel D.C. circuit, showing current and voltage distribution. (10 Marks)

14.

- a) Discuss the identification and characteristics of common electronic components such as resistors, capacitors, diodes, and inductors. Explain the function of each component in an electronic circuit. (10 Marks)
- b) Detail the concept of integrated circuit characteristics and how they are identified. Compare the advantages of integrated circuits over discrete components. (10 Marks)

15.

- a) Explain semiconductor theory, including the definition of semiconductor, atomic structure, and the structure of matter. Describe the behavior of electrons in conductors and semiconductors. (10 Marks)
- b) Discuss the P-N junction diode operations, specifically covering forward biasing and reverse biasing. Explain how these biasing conditions affect the current flow through the diode. (10 Marks)

16.

- a) Explain the classification of memories, detailing the characteristics of RAM, ROM, and DAM. Discuss the differences between semiconductor memories and magnetic memories in terms of speed, cost, and typical applications. (10 Marks)
- b) Describe the different types of number systems (Decimal, Binary, Octal, Hexadecimal) and their importance in digital electronics. Convert the decimal number 4510 to its equivalent in binary, octal, and hexadecimal, showing all steps. (10 Marks)