



PAC INSTITUTE OF TECHNOLOGY AND SOCIAL STUDIES SEPTEMBER – DECEMBER 2024 ASSESSMENT

FORMATIVE ASSESSMENT

Qualification Code : 061306T4CSC
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. Explain the difference between a simple a.c. circuit and a simple d.c. circuit. (4 marks)
3. Calculate the power in watts if the current is 2 amperes and the voltage is 5 volts. (4 marks)
4.
 - i. Explain the role of resistance in an electrical circuit. (2 marks)
 - ii. From the question above, Identify the symbol and function of a resistor in a circuit. (2 marks)
5. List **FOUR** application of diodes in electronic circuits. (4 marks)
6. Highlight **FOUR** characteristics of an integrated circuit. (4 marks)
7. List **TWO** differences between RAM and ROM as used in Electronics. (4 marks)
8. Classify **TWO** different types of memories used in electronic devices. (2 marks)
9. Describe the process of forward biasing in a P-N junction diode. (4 marks)
10. Highlight **TWO** differences between conductors and semiconductors. (4 marks)
11. Outline **FOUR** advantages of semiconductor over other devices. (4 marks)

SECTION B: (60 MARKS)

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

12.

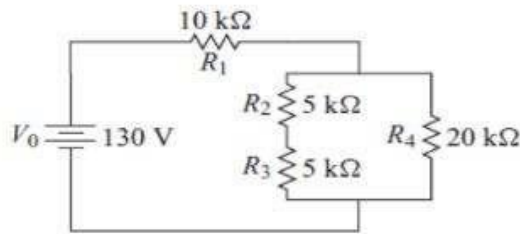
- a) Differentiate between the following terms as used in computer storage:
 - i. Zip disk and Flash disk. (2 Marks)
 - ii. Primary and secondary storage. (2 Marks)
- b) Explain FOUR Types of compact disks. (8 Marks)
- c) Discuss FOUR types of Read Only Memory. (8 Marks)

13.

You are a computer science student tasked with understanding the fundamental number systems used in computer architecture.

- a) List FOUR types of number systems used in computers together with their base. (4 Marks)
- b) Convert the following number systems to their equivalent as indicated in each question
 - i. Binary to Decimal
 - a) 1011_2 (2 Marks)
 - b) 10110_2 (2 Marks)
 - ii. Octal to Decimal
 - a. 542_8 (2 Marks)
 - b. 345_8 (2 Marks)
 - iii. Hexadecimal to decimal
 - a. 3A4. (2 Marks)
 - b. $(1F.01B)_{16}$ (2 Marks)
 - iv. Decimal to hexadecimal equivalent
 - 245_{10} to hexadecimal (2 Marks)
 - v. Binary fraction to hexadecimal
 - $(001100101.110111)_2$ (2 Marks)

14. a study the circuit diagram below and answer the questions that follow;



- i. Calculate the total resistance (4 Marks)
- ii. Calculate the current (2 Marks)

(b) You are a hardware engineer working on a new computer system. To optimize performance and storage capacity, you need to understand the different types of semiconductor memory available.

- i) Discuss FIVE different types of semiconductor memory in modern technology. (10 Marks)
- ii) Outline FOUR importance of semiconductors. (4 Marks)
- iii)

15. You are an electronics engineer working on a new product. You need to understand the role of various electronic components in modern devices

- a) Discuss the role of the following electronic components citing their application in the industry: (10 Marks)
 - i. Motors
 - ii. Circuit breakers
 - iii. Relays
 - iv. Microcontroller
 - v. Fuse

- b) Highlight **THREE** types of integrated circuits. (3 Marks)
- c) Discuss **FOUR** advantages and **THREE** disadvantages of integrated circuits in comparison to other components (7 Marks)

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