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061005T1ICT

ICT TECHNICIAN LEVEL 5

IT/OS/ICT/CC/01/5

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Apply Basic Electronic

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November/ December 2025

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**TVET CURRICULUM DEVELOPMENT, ASSESSMENT AND CERTIFICATION COUNCIL
(TVET CDACC)**

WRITTEN ASSESSMENT

TIME: 3 HOURS

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INSTRUCTIONS TO CANDIDATE

1. This paper consists of **TWO** sections: **A** and **B**.
2. Answer **ALL** questions in section A and **ANY THREE (3)** questions in section B.
3. Marks for each question are indicated in the brackets.
4. Candidate answer booklet
5. Do not write on the question paper.

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This paper consists of Four (4) printed pages

**Candidate should check the question paper to ascertain that all pages are printed as
that no questions are missing.**

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SECTION A (40 MARKS)*Answer ALL the questions in this section.*

1. A technician was troubleshooting a faulty radio circuit. He comes across different symbols in the schematic diagram. Define each one of the following components:
- Resistor
 - Capacitor
 - Diode
 - Inductor (4 marks)
2. A computer repairer was advising a client on memory upgrade. List FOUR reasons why upgrading computer RAM is important. (4 marks)
3. A fridge technician was asked why capacitors are often used in home appliances. List TWO applications of capacitors in daily life he will likely mention. (2 marks)
- A lamp rated 60W is connected to a 240V supply in a household. Calculate:
- The current flowing through the lamp (2 marks)
 - The resistance of the lamp (2 marks)
4. A digital electronics Technician was working on an Electronics lab exercise. Convert the following numbers as directed:
- 1110_8 to hexadecimal (2 marks)
 - 134_{10} to binary (2 marks)
5. Use of old storage technologies like floppy disks drastically dropped in the job market. Highlight FOUR advantages of semiconductor memory over magnetic memory (4 marks)
6. A physicist was preparing a lab for a practical exam. List FOUR basic electrical quantities with their SI units he will likely come across. (4 marks)
7. Represent the following negative numbers using sign magnitude method (4 marks)
- 67_{10}
 - -95_{10}
8. Perform the following operations using two's complement method:
- $101101_2 - 1111_2$ (2 marks)
 - 1011_2 (2 marks)
9. A lighting company were comparing different components used in LED bulbs. Draw the symbols for LED and Zener diode. (4 marks)

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10. A supermarket cashier's system uses BCD arithmetic for calculations. Perform the following additions using BCD arithmetic. $6_{10} + 3_{10}$ (2 marks)

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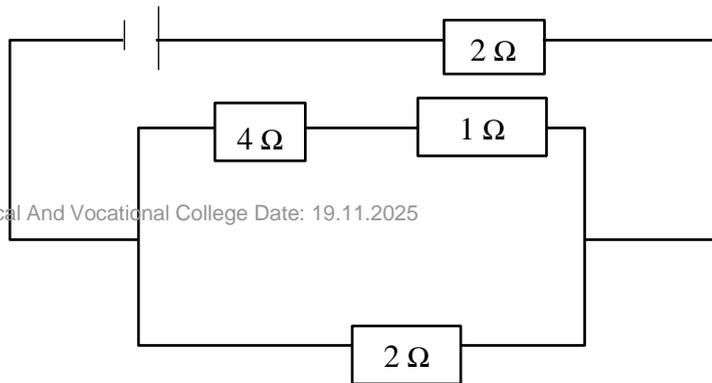
SECTION B: 60 MARKS

Attempt any THREE questions in this section

11. An electrician is conducting a training for apprentices on workshop safety and setting up electrical circuits.

- a. List FOUR types of optical storage devices. (4 marks)
- b. Explain FIVE safety precautions that should be observed in an electronics laboratory. (10 marks)

c. The circuit set up shown below makes a current of 1A to flow through the 4Ω



Calculate;

- i) The current through the resistor 2Ω (3 marks)
- ii) the e.m.f of the cell given that the internal resistance is negligible (3 marks)

12. A college instructor was preparing semiconductor devices for practical in an electronics workshop.

- a. Describe the operation of a PN junction diode under forward bias and reverse bias. (8 marks)
- b. State the differences between inductor memories and magnetic memories, giving two examples of each. (6 marks)

c. Decimal number 567_{10} into:

- i. Binary (2 marks)
- ii. Octal (2 marks)

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iii. Hexadecimal (2 marks)

13. An electronics company was training new employees on lighting technologies. The trainer showed an LED under a microscope. The trainees were asked to compare LED bulbs with older technologies.

a. Explain FOUR advantages of LEDs they would mention over incandescent bulbs. (4 marks)

b. Describe the construction, working and TWO applications of LEDs. (6 marks)

c. Discuss FIVE emerging trends in microelectronics and explain their impact on ICT. (10 marks)

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14. An electronics trainer was demonstrating in class why two wires made of different materials heat up differently when connected to the same power source.

a) Explain FOUR factors that affect resistance of conductors. (8 marks)

b) Explain FOUR advantages of grounding in electrical circuits. (4 marks)

c) Describe the functions of the following memory types.

i. RAM (2 marks)

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ii. ROM (2 marks)

iii. Cache memory (2 marks)

iv. Flash memory. (2 marks)

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