



ELS- Apply Basic Microcontroller

T079

Friday, 23/7/2021

08:30 – 11:30 AM

Names:

Index number

TVET NATIONAL EXAMINATIONS, RTQF LEVEL 5, 2020-2021

QUESTIONS and ANSWERS BOOKLET

OPTION / TRADE : **ELECTRONIC SERVICES**

SUBJECT : APPLY BASIC MICROCONTROLLER

ACADEMIC YEAR: 2020-2021

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NESA2021 NESA2021 NESA2021 NESA2021 NESA2021 NESA2021 NESA2021

[illegible]



TVET NATIONAL EXAMINATION, RTQF LEVEL 5, 2020-2021

INSTRUCTIONS TO CANDIDATES: PART I (Answer Booklet)

1. A candidate should fill in the actual names and the index number on the cover of this questions and answer booklet on the provided place (Black Box).
2. It is illegal for a candidate to write any of his/her names, index number or a school name inside the answer booklet.
3. A candidate should check if all pages of the answer booklet are complete. No candidate should remove or tear any pages or part of it from the answer booklet.
4. A candidate should answer in the language in which the examination is set. (See page **(ii)**)
5. A candidate should sign on the sitting plan when submitting the answer booklet. He/she has also to check if the answer booklet is well sealed.
6. No extra paper is allowed in the examinations room. If a candidate is caught with it his/her results will be nullified.
7. No candidate is allowed to write answers not related to the subject being sat for, otherwise it will be considered as a cheating case.
8. Write your answers on the 12 lined pages (From page 1 of 12 to page 12 of 12).
9. Use the last non-lined pages as draft.
10. Results for any candidate who is caught in examination malpractices are nullified. The cheating can be recognized during examinations administration, marking exercise or even thereafter.

TVET NATIONAL EXAMINATION, RTQF LEVEL 5, 2020-2021

OPTION/TRADE: ELECTRONIC SERVICES

SUBJECT: Apply Basic Microcontroller

DURATION: 3 hours

INSTRUCTIONS TO CANDIDATES: PART II (Question paper)

The paper is composed of two (2) main Sections as follows:

Section I: Attempt all the Twelve (12) questions (60 marks)

Section II: Attempt any Four (4) questions out of Six (6) (40 marks)

Allowed materials:

- Ruler and square
- Calculator

Note:

Every candidate is required to carefully comply with the provided assessment instructions.

01. Define the following terms:

a. Code editor

b. Assembler

c. C compiler

d. Programmer

(5 marks)

02. a) Define: Arduino sketch.

b) Give two (2) parts of basic Arduino sketch.

(5 marks)

03. Give and explain the types of loops when programming the Arduino

microcontroller in C programming.

(5 marks)

04. a) Classify microcontroller by applied instruction set.

(3 marks)

b) In industry, the synchronization helps to precise interval of time by

using microcontroller-based equipment. Which part of microcontroller

does allow such synchronization?

(2 marks)

05. What is expanded microcontroller? Give its advantages.

(5 marks)

06. Classify briefly the types of microcontroller according to size. **(5 marks)**

- 07.** Write the basic structure of C programming. **(5 marks)**
- 08.** Differentiate low level language from high level language. **(5 marks)**
- 09.** Differentiate Embedded memory microcontroller from External memory microcontroller. **(5 marks)**
- 10.** What are the disadvantages of Microcontrollers? **(5 marks)**
- 11.** What is the function of the following softwares when we are programming arduino microcontroller: IDE, Variable, Compiler? **(5 marks)**
- 12.** Microprocessors using 64-bits data bus are currently in use. If the size is increased to 128 or 256 bits, how would that change the performance of the computer? **(5 marks)**

Section II: Attempt any Four (4) questions out of Six (6) (40 marks)

13. a) Define microcontroller. (2 marks)
- b) Differentiate a microcontroller from a microprocessor. (8 marks)
14. Name the basic components of a microcontroller. For each component, give an example where it would be useful. (10 marks)
15. Classify the equipment, tools and materials needed as beginner programmer. (10 marks)
16. a) Define C language. (2 marks)
- b) List the features of C programming. (2 marks)
- c) Give advantages and disadvantage to use C language. (6 marks)
17. a) Define Arduino board. (2 marks)
- b) Identify the types of Arduino boards. (6 marks)
- c) How to test microcontroller-based circuit functionality? (2 marks)
18. a) Define a sensor. (2 marks)
- b) Differentiate the following terms: (8 marks)
- i. Active from Passive Sensors
- ii. Analog from Digital Sensors

Do not write anything on this page !

