NESA NATIONAL EXAMINATION AND SCHOOL INSPECTION AUTHORITY

NET – Telecommunication and Audio-visual devices

T061

Monday, 26/7/2021
08:30 – 11:30 AM

Names: .....

Index number: .....

TVET NATIONAL EXAMINATIONS, RTQF LEVEL 5, 2020-2021

QUESTIONS and ANSWERS BOOKLET

OPTION/ TRADE : **NETWORKING**

SUBJECT : **TELECOMMUNICATION AND AUDIO-VISUAL DEVICES**

ACADEMIC YEAR: **2020-2021**

Read carefully the instructions on page (i) & (ii).

FOR EXAMINER'S USE ONLY

QUESTIONS	1	2	3	4	5	6	7	8	9	10	Total
Marks											

QUESTIONS	11	12	13	14	15	16	17	18	19	20	Total
Marks											

QUESTIONS	21	22	23	24	25	26	27	28	29	30	Total
Marks											

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: NETWORKING

Subject: Telecommunication and Audio-visual devices

DURATION: 3 hours

INSTRUCTIONS TO CANDIDATES:PART II

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.

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

01. Define the following terms: **(5 marks)**
a) Microphone
b) Speaker

02. Answer by **True** or **False** **(5 marks)**

a. A data cable is any media that allows baseband transmissions (binary 8,16's) from a transmitter to a receiver.
b. XLR cables are unbalanced cables.
c. Connector or jack cable is the unique end of a plug, jack, or the edge of a card that connects to a port.
d. Networking cables are networking hardware used to connect one network device to other network devices or to connect two or more computers to share printer, scanner etc. Different types of network cables like Coaxial cable, Optical fiber cable, Twisted Pair cables and power cable are used depending on the network's topology, protocol and size.
e. A toolkit is an assembly of tools; set of basic building units for user interfaces.

03. Use the following terms: **digital mixers, A sound mixer, The wavelength, amplitude, Frequency** to fill in the blanks in the sentences below: **(5marks)**

a. A simple sound wave can be described by its..... and by its.....

b. The .....of a sound wave is the physical distance from the start of one cycle to the start of the next cycle, as the wave moves through the air.

c. A ..... is a device which takes two or more audio signals.

d. The huge advantages of ..... is their ability to save and recall mixes.

04. Perform the following showing all steps: **(5 marks)**

a) Sum of $(101101)_2$ and $(1111)_2$
b) Convert $(101101)_2$ to a hexadecimal base
c) Convert (4DF)16 to a base 2 number
d) Convert $(233)_8$ to a hexadecimal base

05. A computer network is a telecommunications network that allows computers to exchange data. What are five (5) Components of Data Communication system? **(5 marks)**

06. GPS receivers rely on the transmission of radio waves from the GPS satellite network, but sometimes these signals can get blocked. How and why does this occur? What can you do to fix the issue? **(5 marks)**

07. Which wireless protocol would you expect to provide a better foundation for a packet-based telephony service: 802.11 (Wi-Fi) or 802.16 (WiMAX)? Why? **(5 marks)**

08. a) What is meant by Multiplexing and De-multiplexing in transport layer? **(2 marks)**

b) Why is multiplexing and De-multiplexing needed in network? **(3 marks)**

09. What are the applications of Multiplexing techniques? **(5 marks)**

10. Give the illustrations of the following logic gates: AND, XOR, NOR, NOT, OR. **(5 marks)**

11. Using 2nd compliment method, perform the following decimal: 5– 3 **(5 marks)**

12. Match each item in the Column A with the best choice from Column B. **(5 marks)**

ANSWER	**COLUMN A**	**COLUMN B**
1.....	1.A data cable	A. A connector is the unique end of a plug, jack, or the edge of a card that connects to a port
2.....	2. Jack Cables	B. used to connect one network device to other network devices.
3.....	3. XLR	C. set of basic building units for user interfaces.
4.....	4. Network cables	D. is any media that allows baseband transmissions (binary 1,0s) from a transmitter to a receiver.
5.....	5. Toolkit	E. They have circular connectors with three pins--positive, negative and ground.

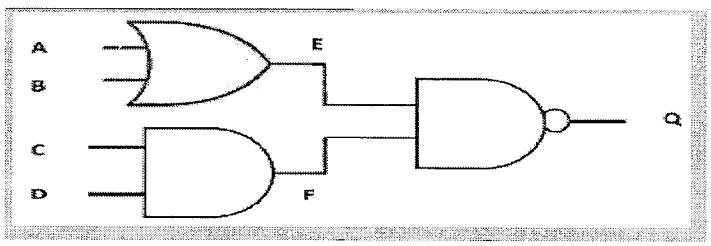
Section II: Attempt any Four (4) questions out of Six (6) **(40 marks)**

13. Mention (ten)10 top steps to consider to maintain a computer.

(10 marks)

14. Study the following logic circuit. Construct a truth table for the circuit.

(10 marks)



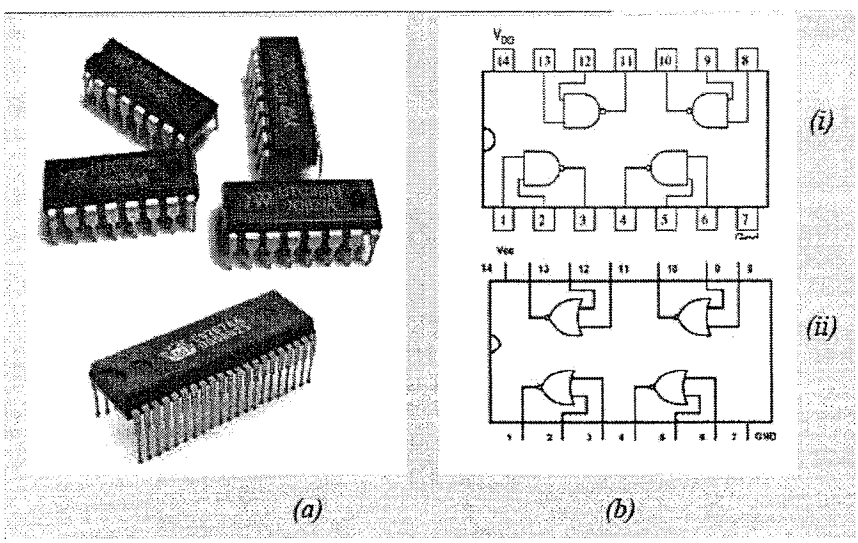
15. Convert each decimal number to its hexadecimal equivalent.

a) 652

b) 943 **(10 marks)**

16. Describe the working principle of a wireless microphone. **(10 marks)**

17. The integrated circuits (ICs) that we have in our electronic devices like radios, televisions, mobile phones, tablets and computers look like the pictures in (a). The internal structure of some of such ICs is shown in Figure (b) (i) and ii). Study them then answer the questions that follow: **(10 marks)**



1) Identify the gates that are found in each of the ICs (i) and (ii) above.

2) In IC (i): If a high voltage signal is fed at pin **13** and a low voltage signal at pin **12**, what will be the output at pin **11**?

3) In IC (ii): If a low voltage signal is at pin **2** and **3**, what will be the output at pin **1**?

18. What are the criteria you based on when you select best suitable mixers?

(10 marks)

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