

MARKER CODE				



STUDENT ENROLMENT NUMBER (SEN)									

TONGA FORM SIX CERTIFICATE

2021

COMPUTING AND ICT

QUESTION AND ANSWER BOOKLET

Time allowed: 2 Hours

INSTRUCTIONS:

1. Write your **Student Enrolment Number (SEN)** on the top right-hand corner of this page.
2. This paper consists of **NINE QUESTIONS** and is out of 70 weighted scores.

QUESTION	STRANDS	TOTAL SKILL LEVEL
ONE	IMPORTANT TRENDS IN ICT	4
TWO	INFORMATION SYSTEMS (IS)	9
THREE	ICT INFRASTRUCTURE	11
FOUR	DIGITAL DESIGN	11
FIVE	COMPUTER PROGRAMMING	11
SIX	MICROPROCESSOR PROGRAMMING	7
SEVEN	SAFE PRACTICES IN ICT	7
EIGHT	SOCIAL ISSUES	5
NINE	ENVIRONMENTAL ISSUES	5
TOTAL		70

3. Answer **ALL QUESTIONS**. Write your answers in the spaces provided in this booklet.
4. Use a **BLUE** or **BLACK** ball point pen only for writing. Use a pencil for drawing if required.
5. If you need more space for answers, ask the supervisor for extra paper. Write your **Student Enrolment Number (SEN)** on each additional sheet, number the questions clearly and insert them in the appropriate places in this booklet.
6. Check that this booklet contains pages **2 - 19** in the correct order and that page 19 has been deliberately left blank.

YOU MUST HAND IN THIS BOOKLET TO THE SUPERVISOR BEFORE YOU LEAVE THE EXAMINATION ROOM.

QUESTION ONE:**IMPORTANT TRENDS IN ICT**

The trends in ICT are more powerful and more essential than ever before.
 Answer the following questions in relation to the Government of Tonga's new ICT plan.

1. Define **ICT**.

Skill level 1	
1	
0	
NR	

2. Explain the efforts made by the Government of Tonga in promoting existing ICT trends.

Skill level 3	
3	
2	
1	
0	
NR	

QUESTION TWO: INFORMATION SYSTEMS (IS)

Give a presentation to your School Management on what they need to know about Information System (IS) and how to implement IS in your school using your responses to the following questions.

1. What is Information System (IS)?

Skill level 1	
1	
0	
NR	

2. State a key benefit of IS Development.

Skill level 1	
1	
0	
NR	

3. Explain the types of IS.

Skill level 3	
3	
2	
1	
0	
NR	

[illegible]

Skill level 4	
4	
3	
2	
1	
0	
NR	

QUESTION THREE: ICT INFRASTRUCTURE

A complete and proper ICT Infrastructure is very important for any organization's daily operations. Demonstrate your understanding of some of the key components by answering the questions that follow.

1. State the purpose of an ICT/IT infrastructure.

Skill level 1	
1	
0	
NR	

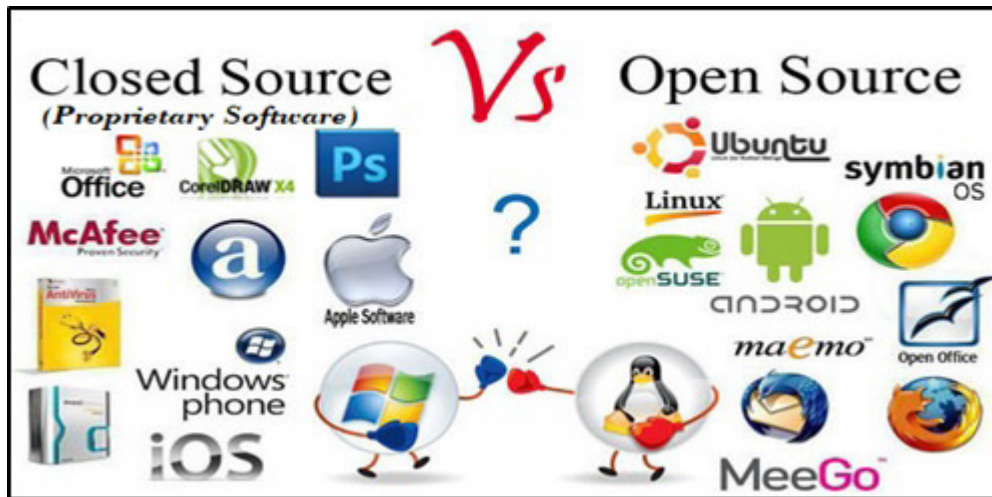
2. State a key feature of a Network Interface Card (NIC).

Skill level 1	
1	
0	
NR	

3. Outline the key features of a Wireless Access Point.

Skill level 2	
2	
1	
0	
NR	

4. Use the information shown below to help you in your answers.



- a. Distinguish between the use of open-source and proprietary (closed-source) software.

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Skill level 3	
3	
2	
1	
0	
NR	

b. Discuss the concerns for users when downloading and installing software from the internet.

[illegible]

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

QUESTION FOUR:**DIGITAL DESIGN**

Your school has a digital media club, and they are recruiting members to take part in a few media development projects for the school. You have been asked to answer the following media questions correctly to be able to join the club.

1. Identify a common type of digital media.

Skill level 1	
1	
0	
NR	

2. State a graphic design requirement for the school magazine.

Skill level 1	
1	
0	
NR	

3. Outline the elements of a good website design.

Skill level 2	
2	
1	
0	
NR	

4. Outline key features that are common in most digital media applications.

Skill level 2	
2	
1	
0	
NR	

5. Outline the specific steps used in creating the school website.

[illegible]

Skill level 2	
2	
1	
0	
NR	

6. Explain the effect of using of application features that can be used on an audio object for the school website.

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Skill level 3	
3	
2	
1	
0	
NR	

QUESTION FIVE:**COMPUTER PROGRAMMING**

1. Computers convert text and other data into binary with an assigned ASCII value. Those values or numbers can be represented using a particular set of symbols depending on each data representation concepts.

Define the following data representation concepts.

- a. ASCII

Skill level 1	
1	
0	
NR	

- b. Hexadecimal

Skill level 1	
1	
0	
NR	

2. A truth table shows the output values for a logic gate based on the set of input values

Complete the truth table for the **OR** logic.

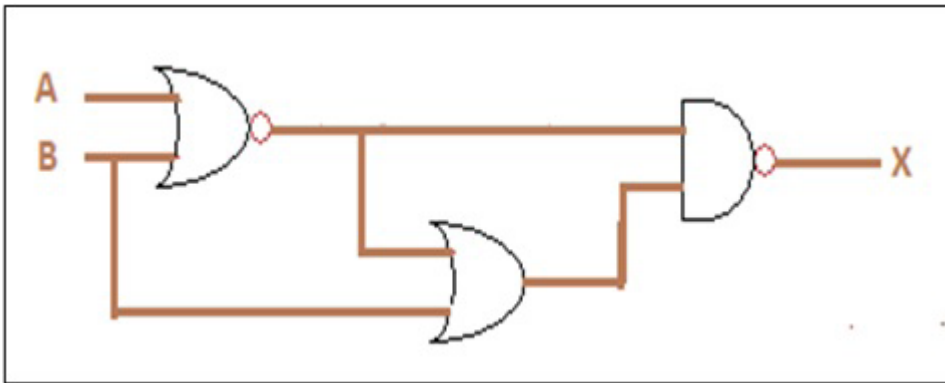
Input A	Input B	<u>Output</u>
1	1	
1	0	
0	1	
0	0	

Skill level 1	
1	
0	
NR	

3. One of the most common programming tools that assist programmers is the **debugger**. State the purpose of a debugger in programming.

Skill level 1	
1	
0	
NR	

4. Complete the truth table for the basic logic circuit given below. Show the outputs for each gate as the input signals pass through the gate.



Truth Table:

A	B					X
1	0					1
1	1					1
0	0					0
0	1					1

Skill level 3	
3	
2	
1	
0	
NR	

5. Discuss the process of computer programming.

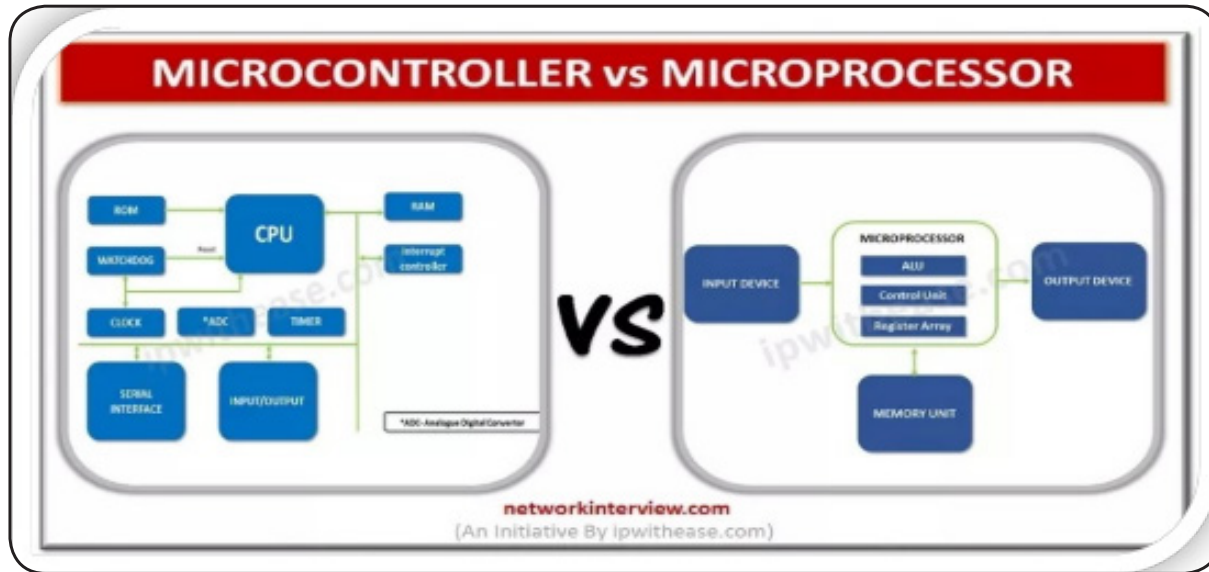
This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Skill level 4	
4	
3	
2	
1	
0	
NR	

QUESTION SIX: MICROPROCESSOR PROGRAMMING

The picture below shows the architecture of the most integral part of computers and other components such as automobiles, appliances and such embedded devices.

Use your understanding of these important parts to answer the following questions.



1. State a key function of a Microprocessor.

Skill level 1	
1	
0	
NR	

2. Some microprocessors can be programmed to perform simple tasks. State a key use of such microprocessors.

Skill level 1	
1	
0	
NR	

3. Outline the basic operations of a microprocessor.

Skill level 2	
2	
1	
0	
NR	

4. In the earliest days of computers, only Binary Language (also called the Low Level Language and/or Machine Language) was used to write programs but now High Level Language is the most common.

Explain the link between high-level language and low-level (machine) language when preparing a programmable microprocessor for use.

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Skill level 3	
3	
2	
1	
0	
NR	

QUESTION SEVEN:

SAFE PRACTICES IN ICT

Considering the growing concerns regarding cyber safety and security in schools, the Principal of a local school asked for your advice on key security issues. As an ICT expert on cyber security, present your advice using your responses to the following questions.

1. Explain the basic security (cyber security) measures to protect your school ICT users and your environment.

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Skill level 3	
3	
2	
1	
0	
NR	

2. State an effective way to implement the above cyber security measures.

Skill level 1	
1	
0	
NR	

3. Provide an ICT safety guideline to be followed by the school when using the internet.

This image shows a full page of blank white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page, providing a guide for writing. There are no margins, text, or other markings on the paper.

Skill level 3	
3	
2	
1	
0	
NR	

QUESTION EIGHT:**SOCIAL ISSUES**

The positive or negative impact of ICT on our societies depend largely on users' behavior when using ICT. There is growing concerns with increasing cybercrimes and unethical (*unacceptable*) use of ICT.

Present your views regarding the concerns by responding to the following questions.

1. State a common social issue in ICT

Skill level 1	
1	
0	
NR	

2. State the issue regarding plagiarism.

Skill level 1	
1	
0	
NR	

3. Explain the effects (on social and cultural practices) of unethical behavior in ICT.

Skill level 3	
3	
2	
1	
0	
NR	

The diagram illustrates a smart city architecture with the following components and flow:

- Cloud:** The central hub for data storage and processing.
- Sensing/M2M:** The layer responsible for data collection, divided into:
 - Social infrastructure:** Includes Transportation, Communications, Electricity, Water, and Gas.
 - Global environment:** Includes Ecosystems, CO₂, Forests, Freshwater, and Climate.
- Inputs:** Population increase and Climate change are shown as external factors influencing the system.
- Monitoring:** A process box that receives 'Various monitoring data' from the cloud and performs 'Monitoring & analysis, prediction, ascertainment of indications'.
- Control:** A process box that performs 'Supply and demand balance, prevention, precaution, maintenance management' based on monitoring data.
- Big data:** Represented by concentric circles, indicating the volume and complexity of the data being processed.
- Goal:** Realize optimal use of resources (eliminate waste), prepare for risks.

- [illegible]

Skill level 2	
2	
1	
0	
NR	

2. Explain effective measures being implemented here in Tonga to address the growing environmental concerns with ICT.

This image shows a full page of blank white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page, providing a template for writing or drawing. There are no margins, text, or other markings on the page.

Skill level 3	
3	
2	
1	
0	
NR	

THIS PAGE HAS BEEN DELIBERATELY LEFT BLANK.