

MARKER CODE				



STUDENT ENROLMENT NUMBER (SEN)									

TONGA NATIONAL FORM SEVEN CERTIFICATE

2023

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 SECTIONS** and is out of 70 weighted scores.

SECTION	STRANDS	TOTAL SKILL LEVEL
ONE	FUTURE TRENDS IN ICT	5
TWO	INFORMATION SYSTEMS (IS)	11
THREE	ICT INFRASTRUCTURE	11
FOUR	DIGITAL DESIGN	10
FIVE	COMPUTER PROGRAMMING	7
SIX	MICROPROCESSOR PROGRAMMING	7
SEVEN	SAFE PRACTICES IN ICT	6
EIGHT	SOCIAL ISSUES	6
NINE	ENVIRONMENTAL ISSUES	7
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 contain pages **2-15** in the correct order.

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

SECTION ONE:**FUTURE TRENDS IN ICT**

The advancement in Information Communication Technology (ICT) such as Artificial Intelligence (AI) will change every aspect of our lives. The world will no longer be the same including the Island nations of the Pacific. Use your understanding of such advancements in ICT to answer the following questions.

1. State an important factor to be considered by Tonga in preparing for future trends in ICT.

Skill level 1	
1	
0	
NR	

2. Outline some of the possible impacts of future ICT trends in Education.

Skill level 2	
2	
1	
0	
NR	

3. Outline some of the main concerns for Tonga because of future ICT trends.

Skill level 2	
2	
1	
0	
NR	

SECTION TWO:**INFORMATION SYSTEMS (IS)**

The modern use of **Information Systems (IS)** is a relationship between organisations and technology. This relationship can affect the performances of an IS application within an organisation such as a school, a bank or a hospital. Show that you have a good understanding of such relationships by responding to the following questions correctly.

1. Name an IS application used by a local organisation that you know.

Skill level 1	
1	
0	
NR	

2. Outline the common characteristics of the IS application named in Question 1. above or any known IS application.

Skill level 2	
2	
1	
0	
NR	

3. Briefly explain the relationship between an organisation's workflow and the required IS application.

Skill level 3	
3	
2	
1	
0	
NR	

4. Outline the main benefits of using IS applications in the Health sector.

Skill level 2	
2	
1	
0	
NR	

5. Organise some of the key guidelines to be followed by IS application developers.

Skill level 3	
3	
2	
1	
0	
NR	

SECTION THREE:

ICT INFRASTRUCTURE

The Government of Tonga is preparing for the implementation of a full ICT infrastructure with a Metropolitan Area Network (MAN) system that will connect all Government Departments. As a hired Consultant for this job, prepare a presentation to Cabinet on key issues and requirements that they need to know using your responses to the following questions.

1. Outline the key features of a Metropolitan Area Network (MAN).

Skill level 2	
2	
1	
0	
NR	

2. Explain the major issues that can possibly affect the implementation of this ICT infrastructure for the Government of Tonga.

Skill level 3	
3	
2	
1	
0	
NR	

SECTION FOUR:

DIGITAL DESIGN

1. The Bank of the South Pacific (BSP) is assessing a media report by the bank’s Media Manager regarding the use of digital media resources. Demonstrate your understanding of the report by responding correctly to the following questions.

a. Outline the concept of digital media.

Skill level 2	
2	
1	
0	
NR	

b. Briefly explain key requirements for creating a video item to be used for BSP’s marketing.

Skill level 3	
3	
2	
1	
0	
NR	

- a. Outline the major components involved in developing a database-driven website.

[illegible]

Skill level 2	
2	
1	
0	
NR	

- b. Briefly explain the advantages of using a database-driven website for the bank.

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Skill level 3	
3	
2	
1	
0	
NR	

SECTION FIVE:

COMPUTER PROGRAMMING

1. Use your understanding of the Binary Number system and Boolean Logic to answer the following questions.

- a. Convert the binary number shown to its hexadecimal equivalent.

Binary	Hexadecimal
101100111	i.

Show your work here

Skill level 1	
1	
0	
NR	

- b. Perform the given binary operation using the 2's complement representation.

Show your work here

Binary Operation
110111
- 11011

Skill level 1	
1	
0	
NR	

- c. Draw (sketch) a basic electrical circuit diagram based on the outcome **Y** of the given Truth Table below with 2 digital inputs **A** and **B**.
(You can start with the Logic expression)

Show your work here

A	B	Y
1	1	0
1	0	1
0	1	1
0	0	0

Skill level 3	
3	
2	
1	
0	
NR	

2. One of the main important stages of computer programming is the “testing” stage. Outline the steps used in the testing of a computer program.

Skill level 2	
2	
1	
0	
NR	

MICROPROCESSOR PROGRAMMING

-
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Skill level 3	
3	
2	
1	
0	
NR	

SECTION SEVEN:

SAFE PRACTICES IN ICT

As we continue to experience the ever-increasing demand for digital content and services, safety and security are key issues for Government and organisations to consider. Demonstrate your understanding of the issues by answering the following questions.

1. Explain the local impacts of Cyber security issues.

[illegible]

Skill level 3	
3	
2	
1	
0	
NR	

2. Explain key safety standards or guidelines that can be used in ICT by local organisations.

[illegible]

Skill level 3	
3	
2	
1	
0	
NR	

SECTION EIGHT:

SOCIAL ISSUES

The Pacific is a very attractive region for cyber-crime activities for many reasons. This has been a major concern for Pacific leaders and are seeking assistance from developing partners. As an expert in this area, show that you can assist the Pacific leaders by providing expert advice using your responses to the following questions.

1. Outline the growing cyber-crime concerns in ICT.

Skill level 2	
2	
1	
0	
NR	

2. Discuss the major challenges facing Pacific Island nations in their efforts to combat (minimise) cyber-crime activities.

Skill level 4	
4	
3	
2	
1	
0	
NR	

SECTION NINE:

ENVIRONMENTAL ISSUES

The main concerns of the increasing use of ICT on our physical environment are ICT waste (e-waste) and the heavy demand for electricity. Share you understanding of the concerns and offer some suggestions that can be considered by Pacific Island countries using your responses to the following questions.

1. State an impact of the heavy use of electricity in ICT on the physical environment.

	Skill level 1	
	1	
	0	
	NR	

2. Outline the various options for managing ICT waste (e-waste).

	Skill level 2	
	2	
	1	
	0	
	NR	

3. Evaluate the options for organisations to consider in addressing heavy usage of electricity by ICT.

	Skill level 4	
	4	
	3	
	2	
	1	
	0	
	NR	