

MARKER CODE				



STUDENT ENROLMENT NUMBER (SEN)									

TONGA NATIONAL FORM SEVEN CERTIFICATE 2019 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 score.

QUESTIONS	TOPICS	TOTAL SKILL LEVEL
ONE	FUTURE TRENDS IN ICT	5
TWO	INFORMATION SYSTEMS (IS)	9
THREE	ICT INFRASTRUCTURE	11
FOUR	DIGITAL DESIGN	11
FIVE	COMPUTER PROGRAMMING	6
SIX	MICROPROCESSOR PROGRAMMING	6
SEVEN	SAFE PRACTICES IN ICT	8
EIGHT	SOCIAL ISSUES	6
NINE	ENVIRONMENTAL ISSUES	8
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 spaces 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 **2-15** in the correct order and that none of the pages is blank.

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

QUESTION ONE: FUTURE TRENDS IN ICT

1. Future trends in ICT will be centred on the integrating of technological innovations based on improved service automations and mobile applications. Provide your assessment of such future innovations and their impacts on key sectors of our economy by answering the following questions.



- a. Identify an important **future ICT trend** in Government.

Skill level 1	
1	
0	
NR	

- b. Assess and report **positive impacts** of future ICT trends in Health.

Skill level 2	
2	
1	
0	
NR	

- c. Outline possible **concerns** that may arise locally because of future ICT trends.

Skill level 2	
2	
1	
0	
NR	

QUESTION TWO: INFORMATION SYSTEMS (IS)

1. As an ICT expert on electronic-government (e-government), you have been asked to present to the leaders of Pacific Island Countries (PICs), the importance and issues about Information Systems (IS) in the development of (PICs). Prepare the main points for your presentation by answering the following questions.
 - a. Provide an example of a **workflow** that can be used by a local organisation in PICs.

		Skill level 2	
		2	
		1	
		0	
		NR	

- b. Explain the **benefits of IS experiences** in the Education sector.

		Skill level 3	
		3	
		2	
		1	
		0	
		NR	

[illegible]

	Skill level 4	
	4	
	3	
	2	
	1	
	0	
	NR	

QUESTION THREE:**ICT INFRASTRUCTURE**

1. Present a simple plan for implementing a basic ICT/IT infrastructure for St. George College by answering the following questions.

- a. State a **key feature** of a Local Area Network (LAN).

- b. Your plan must include the following;

- i. a **simple sketch** of the ICT/IT infrastructure showing the main components.

- ii. an outline of the **main issues** that may prevent St. George College from implementing a proper ICT/IT infrastructure.

Skill level 1	
1	
0	
NR	

Skill level 2	
2	
1	
0	
NR	

Skill level 2	
2	
1	
0	
NR	

- c. Organise an ICT/IT **infrastructural requirements** report to be presented to the principal of St. George College.

[illegible]

Skill level 3	
3	
2	
1	
0	
NR	

2. Part of the report to be presented to the Principal of St. George College is an assessment of software to be used.

Compare **open source and proprietary software** in terms of key strengths and weaknesses.

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Skill level 3	
3	
2	
1	
0	
NR	

QUESTION FOUR:**DIGITAL DESIGN**

1. As a new manager of the web-development team for the BSP bank, you have been asked to present the basic concepts of web development to your team by using the following questions.

- a. Define **CSS**.

Skill level 1	
1	
0	
NR	

- b. Outline some of the main **web-design requirements** for BSP.

Skill level 2	
2	
1	
0	
NR	

- c. Outline the major components involved in developing a **web-driven database** for BSP.

Skill level 2	
2	
1	
0	
NR	

Skill level 3	
3	
2	
1	
0	
NR	

QUESTION FIVE: COMPUTER PROGRAMMING

1. A computer works under a binary system. A binary number represents an electrical signal within an electrical circuit with many logic gates.
 - a. Convert the string of binary digits below to its **hexadecimal** equivalent.



Binary	Hexadecimal
101101101	

Skill level 1	
1	
0	
NR	

- b. To build a logic circuit, people use logic gates to represent the flow of electrical signals within a circuit. Use the basic gate (AND, OR and NOT gates) to draw a logic circuit based on the given truth table.

A	B		Output
0	0		1
0	1		0
1	0		0
1	1		1

Skill level 2	
2	
1	
0	
NR	

2. Briefly explain the process involved in **designing** a programming project.

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Skill level 3	
3	
2	
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QUESTION SIX: MICROPROCESSOR PROGRAMMING

1. Use your answers to the following questions as key points to convince the Board of Tonga Airport Limited (TAL); of the importance of replacing the old flight controller system with a microprocessor (programmable) embedded system.

- a. State a situation where a **dedicated microprocessor** is embedded into a manufactured device.

Skill level 1	
1	
0	
NR	

- b. Outline key advantages of **error free software** that control embedded devices.

Skill level 2	
2	
1	
0	
NR	

- c. Explain the required process for a programmable microprocessor to **respond to changes** in its physical environment.

Skill level 3	
3	
2	
1	
0	
NR	

QUESTION SEVEN:**SAFE PRACTICES IN ICT**

1. A media reporter is preparing a small newspaper article on the importance of computer and cyber security. Please respond to the following questions that were provided by the reporter.

- a. State a common concern with **identity theft**.

Skill level 1	
1	
0	
NR	

- b. Outline the threats posed by **terrorists or organised crime**.

Skill level 2	
2	
1	
0	
NR	

- c. Outline the effects of **viruses** on ICT systems.

Skill level 2	
2	
1	
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NR	

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Skill level 3	
3	
2	
1	
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SOCIAL ISSUES

QUESTION NINE:**ENVIRONMENTAL ISSUES**

1. The Government of Tonga is very much concerned with the growing effect of ICT on the environment and are now seeking expert advice on the concept of sustainable ICT. Prepare some discussion notes for Cabinet on sustainable ICT by answering the following questions.

- a. Define **sustainable** technology.

Skill level 1	
1	
0	
NR	

- b. Outline **effective measures** that are used globally to develop a sustainable ICT industry.

Skill level 2	
2	
1	
0	
NR	

2. Provide some advice to the Government of Tonga on ways to address some of the environmental concerns with ICT by answering the following questions.

- a. State an effective way that **technology** is used to address these concerns.

Skill level 1	
1	
0	
NR	

- b. Evaluate the options for organisations to consider in addressing the concerns with **heavy usage** of fuel-generated electricity by ICT.

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Skill level 4	
4	
3	
2	
1	
0	
NR	