

MARKER CODE				



STUDENT ENROLMENT NUMBER (SEN)									

TONGA NATIONAL FORM SEVEN CERTIFICATE 2020

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
A	FUTURE TRENDS IN ICT	5
B	INFORMATION SYSTEMS (IS)	9
C	ICT INFRASTRUCTURE	11
D	DIGITAL DESIGN	11
E	COMPUTER PROGRAMMING	6
F	MICROPROCESSOR PROGRAMMING	9
G	SAFE PRACTICES IN ICT	6
H	SOCIAL ISSUES	5
I	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 contain pages **2-15** in the correct order and that page 15 have been deliberately left blank.

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

QUESTION A:**FUTURE TRENDS IN ICT**

1. Some of the main future ICT trends that will change the way we live are advancements in AI (Artificial Intelligence) Holography, IoT (Internet of Things) and Virtual Reality. To help prepare the country for such changes, please start a discussion blog (online diary or journal) based on your responses to the following questions.

- a. Explain the importance of future ICT trends to the development of Tonga.

Skill level 3	
3	
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- b. Outline key factors that are required for Tonga to be ready for future ICT trends.

Skill level 3	
2	
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QUESTION B:**INFORMATION SYSTEMS**

1. The Prime Minister (PM) stated that his economic and development policies will focus more on improving public roads and e-government (electronic government). The basis of an e-government system is the use of Information System (IS) applications. Present your views regarding the PM's e-government policy by answering the following questions.

- a. Explain the important characteristics of any IS application that can be used by Government.

Skill level 3	
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- b. Discuss the benefits of IS experiences in Government.

Skill level 4	
4	
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- c. Outline the major concerns for the Government of Tonga in trying to implement IS or e-government applications.

Skill level 2	
2	
1	
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QUESTION C:**ICT INFRASTRUCTURE**

1. You have been asked to design an ICT infrastructural proposal for a local Hardware company. Please start the proposal by answering the questions that follow.

a. Assess and report the main ICT infrastructural requirements for the company.

Skill level 2	
2	
1	
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b. State a key feature of the Internet that will be important for the company.

Skill level 1	
1	
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c. Explain the major issues that can affect a full implementation of an ICT infrastructure for the company.

Skill level 3	
3	
2	
1	
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2. Present to the Chief Operation Officer (CEO) of the Hardware company your software plan by responding to the following questions.

- a. Outline the importance of software version.

Skill level 2	
2	
1	
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- b. Explain your software choice between open source or proprietary software.

Skill level 3	
3	
2	
1	
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QUESTION D:**DIGITAL DESIGN**

1. As a media specialist, you need to convince the organizing committee of the 2020 Pasifika Music Festival that you can manage their media design project by presenting to the committee your responses to the following questions.

- a. Outline required media devices for the festival.

Skill level 2	
2	
1	
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- b. Explain the web-design requirement for developing a website that can promote the festival.

Skill level 3	
3	
2	
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- c. Demonstrate to the committee your understanding of web development languages by briefly explaining the link between CSS and HTML.

Skill level 3	
3	
2	
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- d. State a key benefit of using a web-driven database as part of the project.

Skill level 1	
1	
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NR	

- e. Once you complete the project, outline to the committee the required process that can be used for validating the completed website.

Skill level 2	
2	
1	
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QUESTION E: COMPUTER PROGRAMMING

1. Computer Programming is a way to instruct the computer to perform various tasks. Show that you have the skills to create computer programs by answering the following key programming concepts.

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

Binary Operation	Show your work here
101101	
- 10101	

Skill level 1	
1	
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- b. With the main stages of programming, describe the function of ONE of the stages.

Skill level 2	
2	
1	
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- c. Briefly explain the different types of programming errors.

Skill level 3	
3	
2	
1	
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QUESTION F: MICROPROCESSOR PROGRAMMING



1. A programmable microprocessor provides a high level of control for many electronic devices such as digital fire alarms, air conditioning units or automatic doors. Answer the following questions to demonstrate your understanding of the technology surrounding the development and the use of such important invention.

- a. Outline the interaction within a microprocessor's major components.

Skill level 2	
2	
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- b. Outline the process involved in changing a high-level language to a low-level language.

Skill level 2	
2	
1	
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NR	

- d. Discuss the process involved in preparing a programmable microprocessor to respond to changes in its physical environment.

Skill level 4	
4	
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- e. State a possible response from a programmable microprocessor installed in an automatic door, when a change in its physical environment occurs.

Skill level 1	
1	
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QUESTION G:**SAFE PRACTICES IN ICT**

1. The main concern with ICT safety today is about being safe online. Demonstrate your understanding of ICT safety by answering the following questions.

- a. State a common Cyber security (online) threat.

Skill level 1	
1	
0	
NR	

- b. Outline known issues with having an online identity.

Skill level 2	
2	
1	
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NR	

- c. Explain key safety standards or guidelines that can be used online or in ICT by an individual or organization.

Skill level 3	
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Skill level 4	
4	
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QUESTION I: ENVIRONMENTAL ISSUES

1. For an organization without electricity, ICT is useless. But with too much ICT, electricity usage will increase and can lead to environmental problems. Show that you're familiar with such problems by answering the following questions.

- a. Explain the impact of the high demand for electricity through growing use of ICT on the environment.

Skill level 3	
3	
2	
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- b. State an option for organizations to consider in solving environmental problems caused by the high demand for electricity by ICT.

Skill level 1	
1	
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2. An Environment officer was speaking about environmental problems caused by the high usage of electricity by computer technologies or ICT. In his final statement he said, **“But the same technologies can be used to address the environmental problems associated with ICT.”** Discuss what the officer’s final statement meant.

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Skill level 4	
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