MARKER CODE				

STUDENT ENROLMENT NUMBER (SEN)									

TONGA FORM SIX 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
ONE	IMPORTANT TRENDS IN ICT	5
TWO	INFORMATION SYSTEMS (IS)	8
THREE	ICT INFRASTRUCTURE	11
FOUR	DIGITAL DESIGN	11
FIVE	COMPUTER PROGRAMMING	11
SIX	MICROPROCESSOR PROGRAMMING	6
SEVEN	SAFE PRACTICES IN ICT	8
EIGHT	SOCIAL ISSUES	6
NINE	ENVIRONMENTAL ISSUES	4
	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 2-19 in the correct order and that page 19 have 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 Government of Tonga is facing many issues caused by the current COVID-19 pandemic especially in the area of Education and Health. Provide some advices on how ICT can help with the issues by responding to the following questions.

1. Identify an existing ICT trend that can be used in the area of Education.

_____

_____

_____

Skill level 1	
1	
0	
NR	

2. Identify an existing ICT trends that can be used in the area of Health.

_____

_____

_____

Skill level 1	
1	
0	
NR	

3. Briefly explain the concerns facing the Government of Tonga in promoting the existing ICT trends during this difficult time.

_____

_____

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_____

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_____

Skill level 3	
3	
2	
1	
0	
NR	

QUESTION TWO: INFORMATION SYSTEMS (IS)

Study the components of an Information System (IS) as shown on the diagram below to help you answer the following questions.

1. Define Information System.

Skill level 1	
1	
0	
NR	

2. Outline the different types of Information System that can be found in most Organisations in Tonga today

Skill level 2	
2	
1	
0	
NR	

3. The use of Information Systems (IS) are more important than ever because of the growing fear and restrictions around the world due to the effect of COVID-19. Demonstrate your understanding of how Pacific Island Countries (PICs) are using IS to cope with this difficult time by answering the following questions.

   a. Outline the important features in preparing PICs for implementing Information Systems.

Skill level 2	
2	
1	
0	
NR	

   b. Briefly explain possible challenges with IS development in PICs.

Skill level 3	
3	
2	
1	
0	
NR	

QUESTION THREE: ICT INFRASTRUCTURE

Present a plan to build a school ICT infrastructure platform using your response to the following questions. The plan is limited to a list of key items as presented with the questions.

1. A proprietary software.
   Define proprietary software.

Skill level 1	
1	
0	
NR	

2. Data transmission.
   State a transmission medium.

Skill level 1	
1	
0	
NR	

3. Software installation.
   Outline some of the issues with downloading and installing software from the internet.

Skill level 2	
2	
1	
0	
NR	

4. Software chosen to use.
   Distinguish the use of open-source and proprietary software to help in deciding which type to use.

Skill level 3	
3	
2	
1	
0	
NR	

5. Briefly discuss the need for your school to have a proper ICT/IT infrastructure.

Skill level 4	
4	
3	
2	
1	
0	
NR	

QUESTION FOUR: DIGITAL DESIGN

Digital design is more popular now then ever because of the popularity of social media, easy use of media tools and internet access. As a teacher prepare a lesson on digital media by using your responses to the following.

1. Name TWO different types of digital media.

Skill level 1	
1	
0	
NR	

2. State a digital media device that can be used by your school.

Skill level 1	
1	
0	
NR	

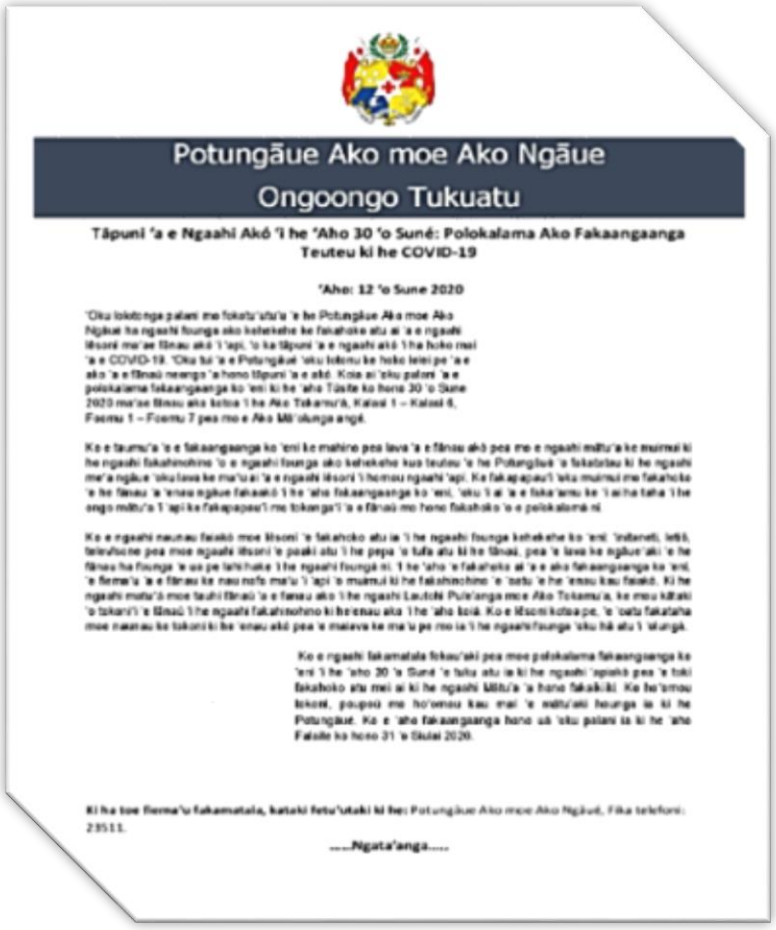
3. State a key feature of an appropriate media application for creating or editing of the school song.

Skill level 2	
2	
1	
0	
NR	

4. Briefly explain the process involved in designing an E-Learning Website for your school.

Skill level 3	
3	
2	
1	
0	
NR	

5. Shown below is a newsletter given to the public in June, 2020 about school closure for the “Home Study Trial 1”.



Potungāue Ako moe Ako Ngāue
Ongoongo Tukuatu

Tāpuni ʻa e Ngaahi Akó ʻi he ʻAho 30 ʻo Suné: Polokalama Ako Fakaangaanga Teuteu ki he COVID-19

ʻAho: 12 ʻo Sune 2020

ʻOku loktonga pelemi mo fokotuʻutuʻa ʻe he Potungāue Ako moe Ako Ngāue ha ngaahi founga ako kehekehe ke fakahoko atu ai ʻa e ngaahi lēsoni moʻoe fōnau akó ʻi ʻapi, ʻo ka tāpuni ʻa e ngaahi akó ʻi he hoko mai ʻa e COVID-19. ʻOku tuʻi ʻa e Potungāue ʻoku totonu ke hoko leinipe ʻa e ako ʻa e fōnaú neongo ʻa hono tāpuni ʻa e akó. Koia ai ʻoku palani ʻa e polokalama fakaangaanga ko ʻeni ki he ʻaho Tūsite ko hono 30 ʻo Sune 2020 moʻoe fōnau ako kotoa ʻi he Ako Takamuʻá, Kalasi 1 – Kalasi 6, Faomu 1 – Faomu 7 pea mo e Ako Mālōlunga angá.

Ko e taumuʻa ʻo e fakaangaanga ko ʻeni ke mahino pea lava ʻa e fōnau akó pea mo e ngaahi mātuʻa ke maʻu ai ha ngaahi fakahinohino ʻo e ngaahi founga ako kehekehe kuo teuteu ʻe he Potungāue ʻa fakatalau ki he ngaahi meʻa ngāue ʻoku lava ke maʻu ai ʻa e ngaahi lēsoni ʻi homou ngaahi ʻapi. Ke fakapapauʻi ʻoku muimui mo fakahoko ʻe he fōnau ʻa ʻenau ngāue fakaakó ʻi he ʻaho fakaangaanga ko ʻeni, ʻoku ʻi ai ʻa e fokaʻanu ke ʻi ai ha taha ʻi he ongo mātuʻa ʻi ʻapi ke fakapapauʻi mo tokanga ʻi ʻa e fōnaú mo hono fakahoko ʻo e polokalomá ni.

Ko e ngaahi naunau fakakó moe lēsoni ʻe fakahoko atu ia ʻi he ngaahi founga kehekehe ko ʻeni: ʻInitaneti, letiō, televīsione pea moe ngaahi lēsoni ʻe peaki atu ʻi he pepa ʻo tufa atu ki he fōnaú, pea ʻe lava ke ngāueʻaki ʻe he fōnau ha founga ʻe ua pe laka hake ʻi he ngaahi founga ní. ʻI he ʻaho ʻe fakahoko ai ʻa e ako fakaangaanga ko ʻeni, ʻe femaʻu ʻa e fōnau ke nau nofo maʻu ʻi ʻapi ʻo muimui ki he fakahinohino ʻe ʻomi ʻe he ʻenau kau fakakó. Ki he ngaahi matuʻá moe tauhi fōnaú ʻa e faingamālie ke ʻi he ngaahi Lautohi Puleʻanga moe Ako Tokamuʻa, ke mou kātaki ʻo tokoniʻi ʻa fōnaú ʻi he ngaahi fakahinohino ki heʻenau ako ʻi he ʻaho kotá. Ko e lēsoni kotoa pe, ʻe ʻomi fakataha moe naunau ke tokoni ki heʻenau akó pea ʻe maʻuluʻpe mo ia ʻi he ngaahi founga ʻoku hā atu ʻi ʻolungá.

Ko e ngaahi fakamatala fokauʻaki pea moe polokalama fakaangaanga ko ʻeni ʻi he ʻaho 30 ʻa Suné ʻe talu atu ia ki he ngaahi ʻapiakó pea ʻe toki fakahoko atu mei ai ki he ngaahi Mātuʻa ʻa hono fakakiká. Ke heʻomou tokoní, pouaki mo hoʻomou kau mai ʻe matuʻaki hounga ia ki he Potungāue. Ka e ʻaho fakaangaanga hono uá ʻoku palani ia ki he ʻaho Falaile ko hono 31 ʻo Siulai 2020.

Ki ha toe fiemaʻu fakamatala, kataki fetuʻutaki ki he: Potungāue Ako moe Ako Ngāué, Fika telefoni: 23511.

.....Ngataʻanga.....

Suggest briefly the graphics design requirements for this newsletters.

Skill level 4	
4	
3	
2	
1	
0	
NR	

QUESTION FIVE: COMPUTER PROGRAMMING

1. In Computing, number systems are used to represent Data in Logic circuits. Computers use binary number system while humans use hexadecimal numbering system to shorten binary and make it easier to understand.

   Convert the decimal number **154** to hexadecimal.

   _____

   _____

   _____

Skill level 1	
1	
0	
NR	

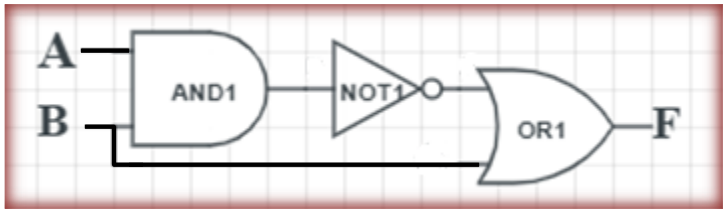
2. A truth table shows the output values for a logic gate based on set of input Values.

   Complete the truth table for the **AND** logic gate**.**

Input A	Input B	**Output**
1	1	
1	0	
0	1	
0	0	

Skill level 1	
1	
0	
NR	

3. Complete the truth table for the logic circuit given below.



Truth Table:

A	**B**				**F**
1	0				
1	1				
0	0				
0	1				

Skill level 2	
2	
1	
0	
NR	

4. State the relationship between a logic circuit and a digital circuit.

Skill level 1	
1	
0	
NR	

5. One of the tools that programmers use when writing/coding computer programs is a **Debugger**.

   What is the purpose of a debugger in programming?

Skill level 1	
1	
0	
NR	

6. State the purpose of **data types** in programming.

Skill level 1	
1	
0	
NR	

7. Despite the fact that there are about 600 programming languages available for programmers to use nowadays, the basic process of computer programming remains the same.

   Discuss the basic process of computer programming.

Skill level 4	
4	
3	
2	
1	
0	
NR	

QUESTION SIX: MICROPROCESSOR PROGRAMMING

Study the diagram below to help you answer the questions that follow.

1. State the purpose of a machine language.

Skill level 1	
1	
0	
NR	

2. Briefly explain the link between high-level language and machine language.

Skill level 3	
3	
2	
1	
0	
NR	

3. A programmable microprocessor (microcontroller) handles the operation of a digital device.
   Outline the major components involved in controlling a programmable microprocessor.

Skill level 2	
2	
1	
0	
NR	

QUESTION SEVEN: SAFE PRACTICES IN ICT

The 2019 Global Risks Report provides a list of global concerns that require global responses. One of the major issues highlighted in the report is Cyber Security.

Prepare a short newspaper article on this issue using your responses to the following questions.

1. State a common concern with Cyber security.

Skill level 1	
1	
0	
NR	

2. State an effective measure to protect ICT users from security threats or attacks.

Skill level 1	
1	
0	
NR	

3. Briefly explain some of the most effective ways to implement cyber security measures.

Skill level 3	
3	
2	
1	
0	
NR	

4. Explain key features of an ICT security system that can be part of the implementation.

Skill level 3	
3	
2	
1	
0	
NR	

QUESTION EIGHT: SOCIAL ISSUES

ICT continues to influence (change) the way we live, work, socialize, learn and interact with others. Use the message that is clearly shown on the diagram to help you answer the following questions.

1. Briefly explain the major ethical concerns (unacceptable behavior) with the growing use of ICT.

Skill level 3	
3	
2	
1	
0	
NR	

2. Explain key measures that are used or can be used to minimize the impact of ethical concerns in ICT.

Skill level 3	
3	
2	
1	
0	
NR	

QUESTION NINE: ENVIRONMENTAL ISSUES

ICT has both positive and negative impacts on the environment.
E-waste is a negative effect but can be managed properly.

1. State an effective way to manage e-waste in Tonga.

Skill level 1	
1	
0	
NR	

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

Skill level 3	
3	
2	
1	
0	
NR	

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