Marker Code				

Student Personal Identification Number					

TONGA GOVERNMENT
MINISTRY OF EDUCATION AND TRAINING

Tonga National Form Seven Certificate

INFORMATION AND COMMUNICATIONS TECHNOLOGY

2015

QUESTION and ANSWER BOOKLET

Time allowed: 3 hours

INSTRUCTIONS

1. Write your **Student Personal Identification Number (SPIN)** on the top right hand corner of this booklet.
2. Answer ALL QUESTIONS. Write your answers in the spaces provided in this booklet.
3. If you need more space for answers, ask the Supervisor for extra paper. Write your SPIN on all extra sheets used and clearly number the questions. Attach the extra sheets at the appropriate places in this booklet.

		Pages	Time (mins)	Total
SECTION A	Open source and proprietary software	2	12	6%
SECTION B	Media Production	3-5	28	16%
SECTION C	Ethics of ICT	6-7	18	10%
SECTION D	Programming	8-10	28	16%
SECTION E	Environmental issues and Climate change	11-12	18	10%
SECTION F	Website design and development	13-15	28	17%
SECTION G	Safe practice IN ict	16-17	18	10%
SECTION H	Microprocessor Control	18-20	27	15%
TOTAL		20 pages	180 mins	100%

Check that this booklet contains pages 2-23 in the correct order. Page 21-23 has been deliberately left blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

SECTION A: OPEN SOURCE AND PROPRIETARY SOFTWARE

1. Your task is to assess the use of open source and proprietary software and present to the management of a local company.

   a. Fill the table below with a characteristic of an Open Source and a Proprietary software.

Type of Software	Characteristic
Open Source	
Proprietary	

Skill level 1	
1	
0	
NR	

   b. Clearly explain to the company management the key strengths and weaknesses of your choice of software type.

Skill level 3	
3	
2	
1	
0	
NR	

2. Name two (2) well-known Open source software and state a key feature for each software.

Name of Software	Key feature
i)	
ii)	

Skill level 2	
2	
1	
0	
NR	

SECTION B: MEDIA PRODUCTION

1. The manager of the Tonga Broadcasting Commission (TBC) agreed to upgrade their media production equipment and tools.

   a. State a hardware requirement that can improve the quality of TBC's graphic processing displays.

Skill level 1	
1	
0	
NR	

   b. Explain the requirements for creating animated objects if requested by clients of TBC.

Skill level 3	
3	
2	
1	
0	
NR	

   c. Describe two (2) advance features that TBC can consider in assessing graphics software for processing scanned pictures, graphics or photos.

Skill level 2	
2	
1	
0	
NR	

d. Describe two (2) advanced features that you will be looking for in a video processing software to improve the quality of TBC's video files.

Skill level 2	
2	
1	
0	
NR	

2. A new digital media studio is equipped with state of the art audio and video production facilities. The studio has a selection of audio processing software to be used for different types of recordings.

a. Name an audio peripheral that you expect to find in the studio.

Skill level 1	
1	
0	
NR	

b. Explain the main reasons for your selection of audio peripheral for the studio.

Skill level 3	
3	
2	
1	
0	
NR	

3. You have been asked to design a new TV advertisement project for the Tonga Development bank. The new advertisement must contain a combination of graphics, audio and video. Discuss the process involved in designing an integrated but very attractive advertisement.

Skill level 4	
4	
3	
2	
1	
0	
NR	

SECTION C: ETHICS OF ICT

1. Advances in Information Communication Technology (ICT) will continue to change the way we live and work. Just like advances in any other area of endeavor, can generate societal changes that can give rise to the following ethical issues and security concerns.

a. Define Piracy.

Skill level 1	
1	
0	
NR	

b. Define Privacy.

Skill level 1	
1	
0	
NR	

c. Define Plagiarism.

Skill level 1	
1	
0	
NR	

d. State the law relating to Piracy.

Skill level 1	
1	
0	
NR	

e. Describe two types of ICT security concerns posed or caused by employees.

Skill level 2	
2	
1	
0	
NR	

f. Discuss in details ways to protect computers and users from the above security concerns.

Skill level 4	
4	
3	
2	
1	
0	
NR	

SECTION D: PROGRAMMING

1. One of your roles as the new head of programming for Google is to train new programmers on the concepts of computer programming. Use your experiences in programming to prepare your training materials as follows:

   a. State the purpose of programming.

   _____

   _____

   _____

Skill level 1	
1	
0	
NR	

   b. Fill the table below with the six steps of programming.

Steps of programming	
i)	iv)
ii)	v)
iii)	vi)

Skill level 2	
2	
1	
0	
NR	

   c. Use the problem below to demonstrate to the new programmers how each of the given design concepts can be used in programming.

Problem: Comparing two numbers to find the higher number or they are equal.

   i) Complete the step by step Pseudocode conventions required for solving the problem.

Pseudocode
i) *Enter the first number*
ii)
iii) *If the first number is higher than the second number than the first number is higher.*
iv)
v)

Skill level 3	
3	
2	
1	
0	
NR	

ii) Use the space below to develop a flowchart to demonstrate the logical process in solving the above problem.

Skill level 4	
4	
3	
2	
1	
0	
NR	

d. Explain to the new programmers the importance of using the above design concepts in programming.

Skill level 3	
3	
2	
1	
0	
NR	

2. Define the following programming concepts that are applied after the designing stage.

a. coding

Skill level 1	
1	
0	
NR	

b. variables

Skill level 1	
1	
0	
NR	

c. troubleshooting

Skill level 1	
1	
0	
NR	

SECTION E: ENVIRONMETAL ISSUES AND CLIMATE CHANGE

1. Study the part of an online article below and answer the questions that follow.

   "*The acceleration of scientific achievement in the last few decades was enabled by computers. During this time, significant changes have begun to occur in our natural environment as a result of technological development, social changes, and the massive production and consumption of computing equipment."*

   http://cpsr.org/issues/env/

   a. Name a major physical waste concern caused by the increasing use of ICT.

Skill level 1	
1	
0	
NR	

   b. Describe two (2) effective options for addressing the above waste concern.

Skill level 2	
2	
1	
0	
NR	

2. As we continue to depend heavily on technological advancements, we need to focus more on sustainable ICT solutions. Use some examples to discuss effective ways of implementing sustainable ICT solutions.

Skill level 4	
4	
3	
2	
1	
0	
NR	

3. Briefly explain the main concerns with the increasing use of ICT and their contribution to climate change.

Skill level 3	
3	
2	
1	
0	
NR	

SECTION F: WEBSITE DESIGN AND DEVELOPMENT

1. Study the job advertisement below.

"The Tonga Tourism Bureau (TTB) is seeking a web developer with skills in graphic and web design to assist with the development of a new website to promote the Heilala week beauty pageant".

You wish to apply for the position and you need to prepare your application by answering the following questions.

a. State the purpose of a website.

Skill level 1	
1	
0	
NR	

b. List four (4) elements of good graphic design.

Skill level 2	
2	
1	
0	
NR	

c. Describe two (2) of the web design principles that you can use.

Skill level 3	
3	
2	
1	
0	
NR	

d. Explain the required process or steps to incorporate a database into a website.

Skill level 3	
3	
2	
1	
0	
NR	

e. Explain the economical benefit of a website to TTB.

Skill level 3	
3	
2	
1	
0	
NR	

2. Clearly explain the required steps in checking that a website is fully operational.

Skill level 3	
3	
2	
1	
0	
NR	

3. Describe the main differences between CSS and HTML.

Skill level 2	
2	
1	
0	
NR	

SECTION G: SAFE PRACTICE IN ICT

1. Use your understanding of ICT security threats to prepare a speech for the school's ICT safety week. Complete your preparation by answering the questions that follow.

   a. Define identify theft.

Skill level 1	
1	
0	
NR	

   b. Discuss the major impact of identity theft on society and offer some advices on how to minimise this impact.

Skill level 4	
4	
3	
2	
1	
0	
NR	

   c. Explain how the concept of encryptions can be used to secure data and ICT equipment.

Skill level 3	
3	
2	
1	
0	
NR	

2. You have been asked to prepare a computer security policy for the Vaiola hospital by answering the questions that follow.

   a. Define ICT security

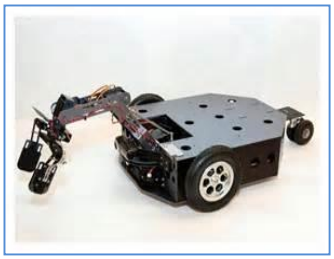
Skill level 1	
1	
0	
NR	

   b. Name an appropriate physical security that you can propose to protect the hospital's ICT facilities and data.

Skill level 1	
1	
0	
NR	

SECTION H: MICROPROCESSOR CONTROL

1. This is a diagram of a toy car controlled only by a programmable microprocessor and a sensor.



a. Define microprocessor.

Skill level 1	
1	
0	
NR	

b. Name a basic component of a microprocessor.

Skill level 1	
1	
0	
NR	

c. Discuss the required steps in preparing the microprocessor to respond to the change in the toy car's physical environment.

Skill level 4	
4	
3	
2	
1	
0	
NR	

d. State an example of a change in the car's physical environment.

Skill level 1	
1	
0	
NR	

e. If the toy car failed to respond correctly as expected, state a likely cause of such failure.

Skill level 1	
1	
0	
NR	

2. One of the simple ways of using a programmable microprocessor at home is with an automated gate as shown in the diagram.

a. Explain the steps involved in getting the embedded microprocessor to control the gate.

Skill level 4	
4	
3	
2	
1	
0	
NR	

b. Explain why it is important that the software that drives the gate's embedded microprocessor is error free.

Skill level 3	
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