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.

<table>
<thead>
<tr>
<th>SECTION</th>
<th>Description</th>
<th>Pages</th>
<th>Time (mins)</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>Open source and proprietary software</td>
<td>2</td>
<td>12</td>
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<tr>
<td>B</td>
<td>Media Production</td>
<td>3-5</td>
<td>28</td>
<td>16%</td>
</tr>
<tr>
<td>C</td>
<td>Ethics of ICT</td>
<td>6-7</td>
<td>18</td>
<td>10%</td>
</tr>
<tr>
<td>D</td>
<td>Programming</td>
<td>8-10</td>
<td>28</td>
<td>16%</td>
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<tr>
<td>E</td>
<td>Environmental issues and Climate change</td>
<td>11-12</td>
<td>18</td>
<td>10%</td>
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<tr>
<td>F</td>
<td>Website design and development</td>
<td>13-15</td>
<td>28</td>
<td>17%</td>
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<tr>
<td>G</td>
<td>Safe practice IN ict</td>
<td>16-17</td>
<td>18</td>
<td>10%</td>
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<tr>
<td>H</td>
<td>Microprocessor Control</td>
<td>18-20</td>
<td>27</td>
<td>15%</td>
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<td>20 pages</td>
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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      |                |

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

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

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<tr>
<th>Name of Software</th>
<th>Key feature</th>
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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.

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

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


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.


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


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.
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.

   b. Define Privacy.

   c. Define Plagiarism.

   d. State the law relating to Piracy.

   e. Describe two types of ICT security concerns posed or caused by employees.
f. Discuss in details ways to protect computers and users from the above security concerns.

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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.

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

   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)

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

![Flowchart](image)

d. Explain to the new programmers the importance of using the above design concepts in programming.
2. Define the following programming concepts that are applied after the designing stage.

   a. coding

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   b. variables

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   c. troubleshooting

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SECTION E: ENVIRONMENTAL 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.

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

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

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

   c. Describe two (2) of the web design principles that you can use.
d. Explain the required process or steps to incorporate a database into a website.

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

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

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Describe the main differences between CSS and HTML.
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.

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

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

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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

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

   b. Name a basic component of a microprocessor.

   c. Discuss the required steps in preparing the microprocessor to respond to the change in the toy car’s physical environment.
d. State an example of a change in the car's physical environment.

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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.

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Skill level 1

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Skill level 4

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