

MARKER CODE				



STUDENT ENROLMENT NUMBER (SEN)									

TONGA NATIONAL FORM SEVEN CERTIFICATE

COMPUTING AND ICT

2017

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. Answer ALL QUESTIONS. Write your answers in the spaces provided in this booklet.
3. If you need more spaces for answers, ask the Supervisor for extra paper. Write your SEN on all extra sheets used and clearly number the questions. Attach the extra sheets at the appropriate places in this booklet.

	Page	Time (mins)	TOTAL SKILL LEVEL
QUESTION A Future Trends in ICT	2	3 minutes	2
QUESTION B Information Systems	3 – 4	12 minutes	7
QUESTION C ICT Infrastructure	5 – 6	12 minutes	7
QUESTION D Digital Design	7 – 8	14 minutes	8
QUESTION E Computer Programming	9 – 10	22 minutes	13
QUESTION F Microprocessor Programming	11 – 12	21 minutes	12
QUESTION G Safe Practices in ICT	13	6 minutes	4
QUESTION H Social Issues	14	9 minutes	5
QUESTION I Environmental Issues	15 - 17	21 minutes	12
TOTAL	2-17	120 min	70

Check that this booklet contain pages 1-19 in the correct order and that pages 18-19 has been deliberately left blank.

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

QUESTION A : Future Trends in ICT

1. We expect to see more technological advancements in the future as we continue to depend heavily on the use of ICT in Government, different workplaces and in schools. Use your understanding of future ICT trends to outline and report some of the possible impacts of future ICT trends in Government.

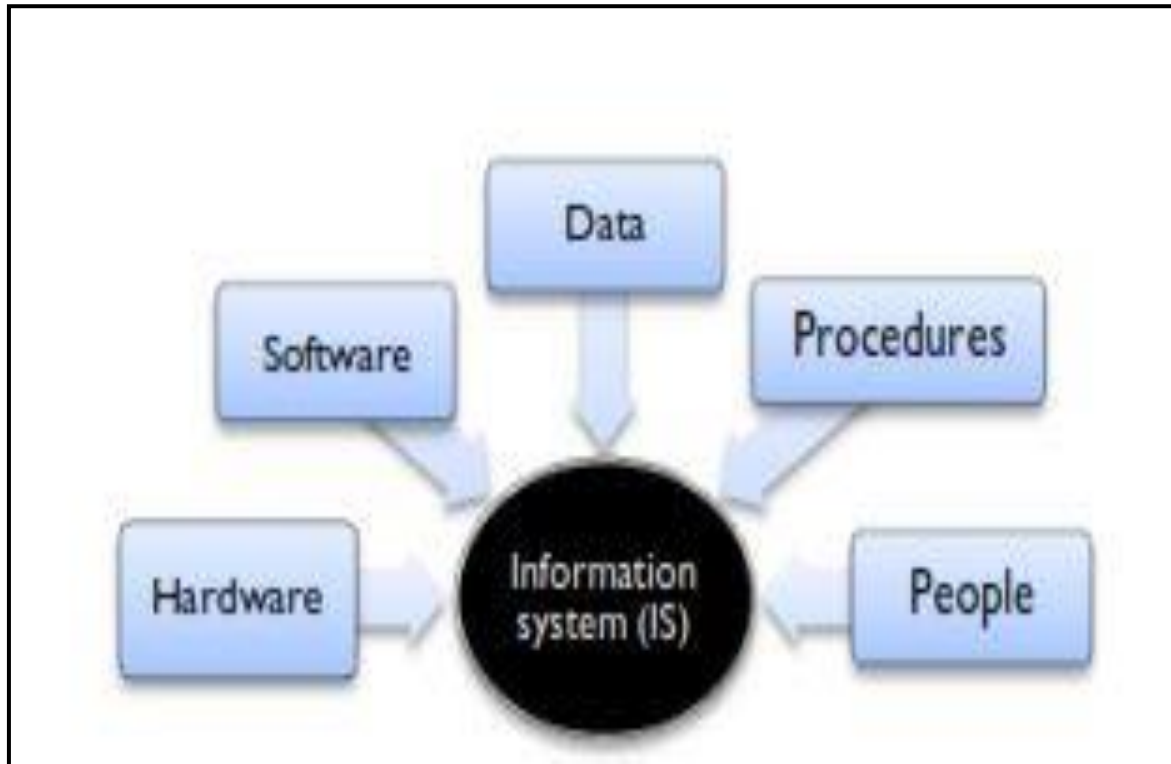


Outline and report some possible impacts of future ICT trends in Government.

Skill level 2	
2	
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QUESTION B: Information Systems (IS)

1. The diagram below shows the major components of an Information System (IS). These components can be represented by an IS application or software.



- a. Name an IS application that is used by any local organisation.

Skill level 1	
1	
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- b. The quality of an IS application depends a lot on a clear and accurate workflow or work processes.

- i. Define workflow.

Skill level 1	
1	
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- ii. Outline an example of a workflow that is used by any organization here in Tonga.

[illegible]

Skill level 2	
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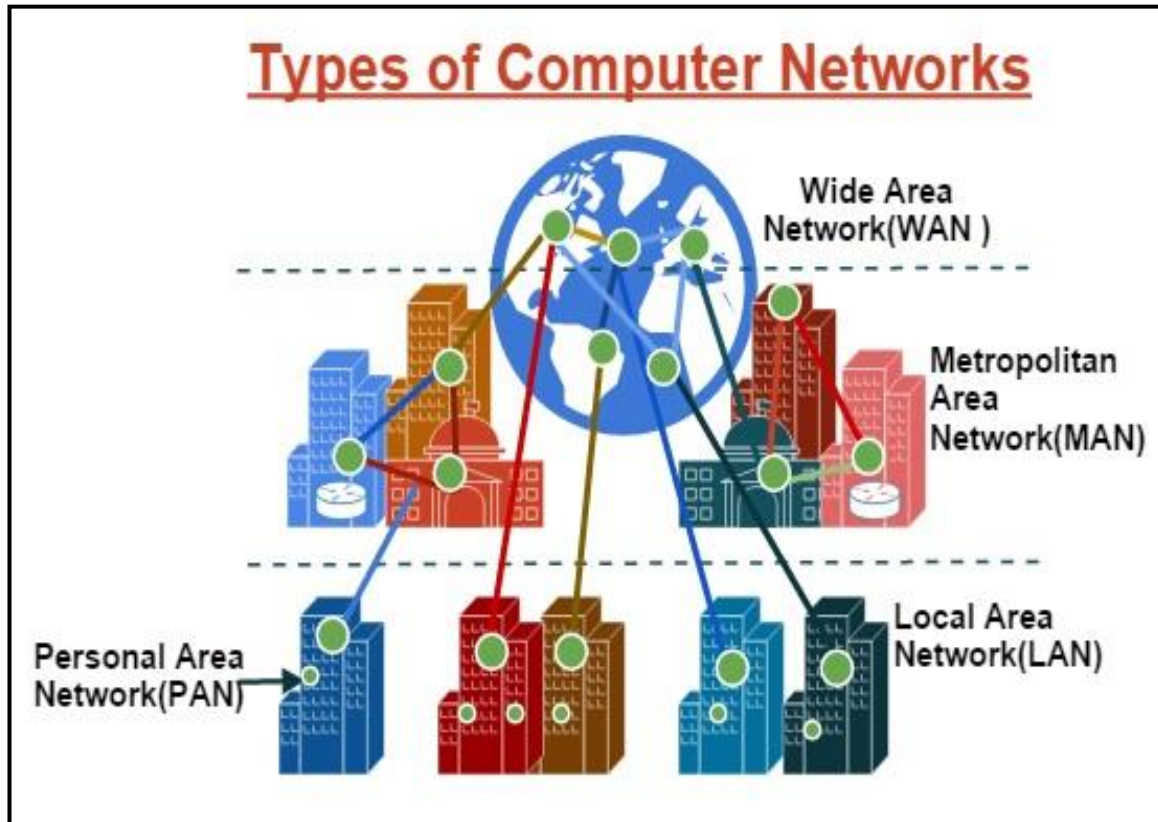
- iii. Explain the link between a workflow and IS.

[illegible]

Skill level 3	
3	
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QUESTION C: ICT Infrastructure

1. Shown below is a diagram of different types of data networks.



- i. Outline **TWO** (2) features of a Metropolitan Area Network (MAN).

Skill level 2	
2	
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2. Name a proprietary software that is currently used at your school.

Skill level 1	
1	
0	
NR	

3. Outline the strengths in using proprietary software at your school.

Skill level 2	
2	
1	
0	
NR	

4. Outline the strengths in using open source software at your school.

Skill level 2	
2	
1	
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QUESTION D : Digital Design

1. Today, there are so many software that can be used to design websites faster, easier and with minimal or no coding involved. However, a good understanding of CSS and HTML coding are necessary for designing high quality websites.

a. Define CSS.

Skill level 1	
1	
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b. Explain the link between CSS and HTML.

Skill level 3	
3	
2	
1	
0	
NR	

2. Web development involves the use of different media applications for creating and processing different types of media files such as graphics, audio and video.

- a. Outline the main graphic design requirements for designing a school website.

Skill level 2	
2	
1	
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- b. Outline and report any specific features of a video processing application for creating video files for a website.

Skill level 2	
2	
1	
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QUESTION E : Computer Programming

1. Computer programming is preparing a computer to perform different tasks using different coding systems.

a. Define coding.

Skill level 1	
1	
0	
NR	

b. Define Unicode.

Skill level 1	
1	
0	
NR	

c. Explain the different types of programming errors.

Skill level 3	
3	
2	
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2. Convert the hexadecimal number below into binary then to decimal. (Show your working in the space provided.)

Hexadecimal	Binary	Decimal
5F	i.	ii.

Skill level 2	
2	
1	
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3. Perform the arithmetic operation below using the 2's complement representation. (Show your work)

$$12 + (-7)$$

Skill level 3	
3	
2	
1	
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NR	

4. Design a basic digital circuit using logic gates for the truth table with 2 input "A" and "B" and output "Q" shown below.

Symbol	Truth Table		
	A	B	Q
	0	0	0
	0	1	1
	1	0	1
	1	1	0

Skill level 3	
3	
2	
1	
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QUESTION F : Microprocessor Programming

1. Name **ONE** (1) of the major components of a microprocessor.

Skill level 1	
1	
0	
NR	

2. Define embedded microprocessor.

Skill level 1	
1	
0	
NR	

3. Describe a situation where an embedded microprocessor is built into an embedded device.

Skill level 2	
2	
1	
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4. Explain why it is important that the software that drives the embedded microprocessor is error free.

Skill level 3	
3	
2	
1	
0	
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Skill level 2	
2	
1	
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6. Explain how a program written in a high level language is changed into machine code.

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

Skill level 3	
3	
2	
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QUESTION G : Safe Practices in ICT

One of the major challenges for companies connecting to the internet is Data security.
The protection of its data from internal and external threats.

1. State the main types of ICT security.

Skill level 1	
1	
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2. Explain the effects that viruses and other forms of worms have on ICT systems.

Skill level 3	
3	
2	
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NR	

QUESTION H : Social Issues

Cyber-crime is now a major concern not only in Tonga but throughout the world today.

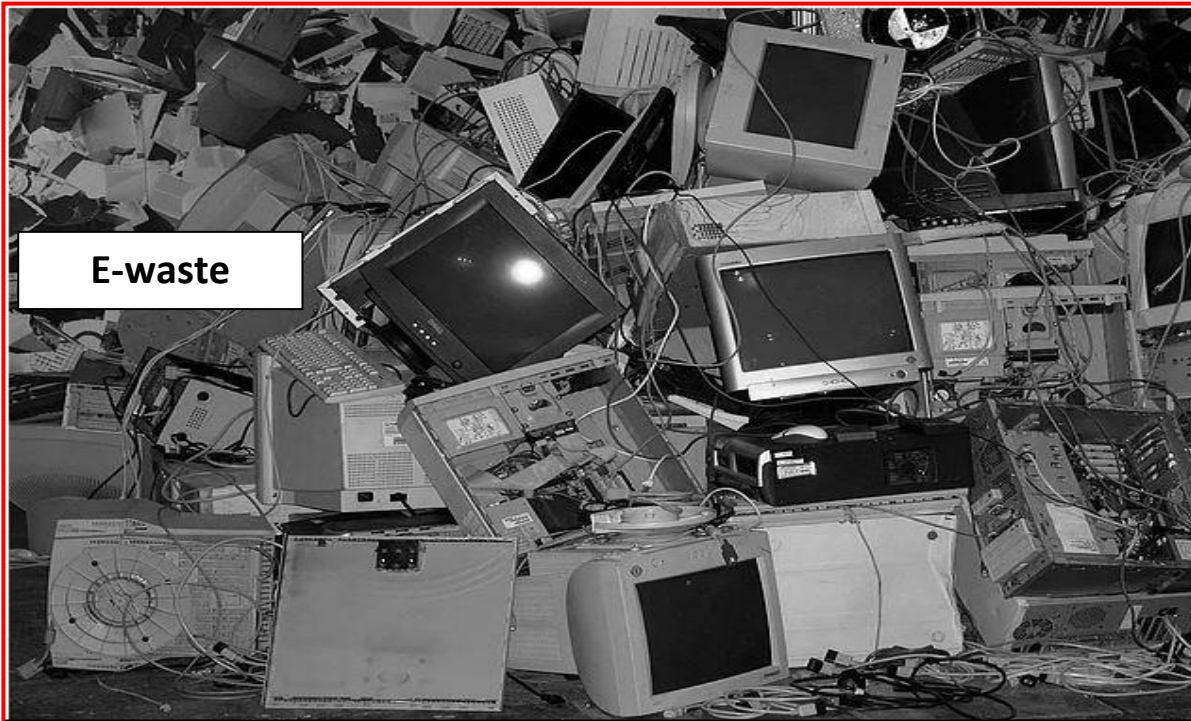
1. Outline the growing cyber-crime concerns in ICT.

Skill level 2	
2	
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2. Explain the key efforts being implemented locally or globally in regards to combating cyber-crimes.

Skill level 3	
3	
2	
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QUESTION I : Environmental Issues



As modern society becomes dependent on technology, the amount of electronic waste will continue to increase.

A global study revealed that the world's e-Waste is expected to grow by 33% this year or reach 72 million tonnes (65 million metric tonnes).

Source: <http://www.greentechchallenge.eu/single-post/2017/02/16/Worlds-electronic-waste...>

1. Use the information above and your understanding of ICT waste to answer the questions that follow.

a. Outline the effect of dumping ICT waste in landfill on the environment.

Skill level 2	
2	
1	
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NR	

- b. Outline the effect of burning ICT waste on the environment.

Skill level 2	
2	
1	
0	
NR	

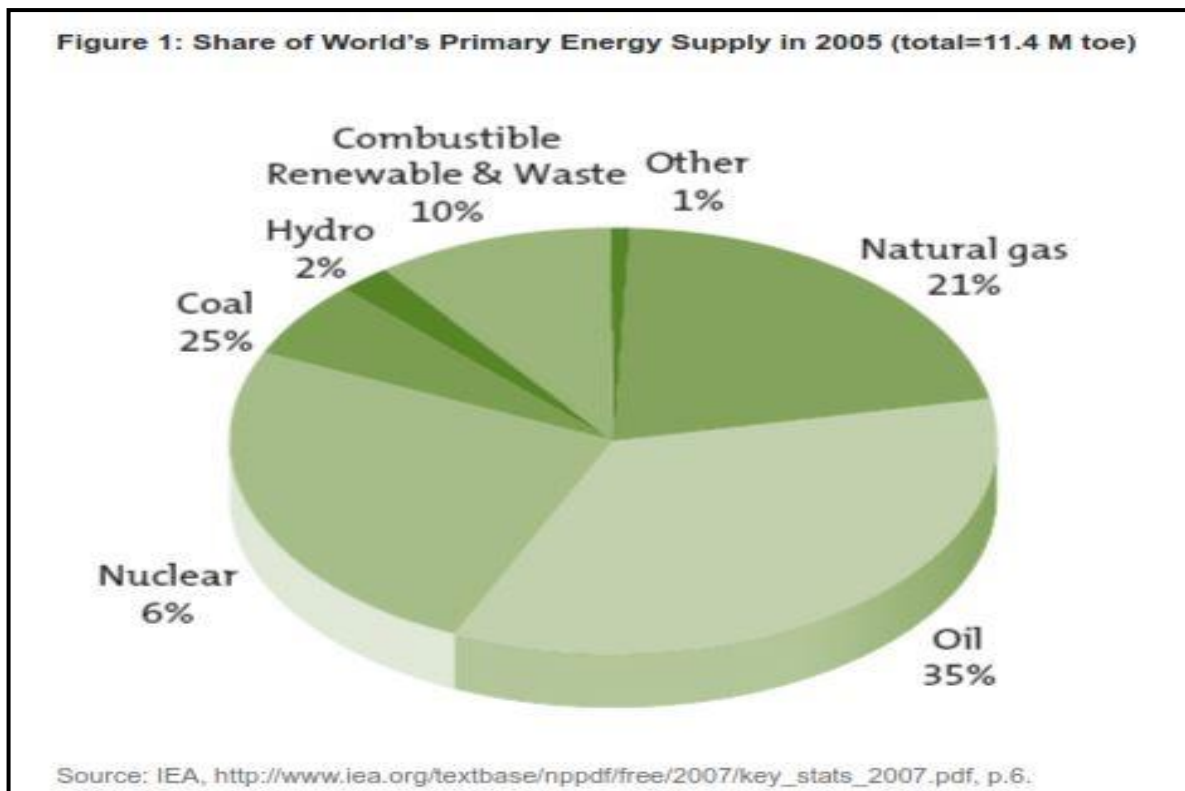
- c. Sustainable technology is one of the main focuses of today's ICT development and consumption.

Define sustainable technology.

Skill level 1	
1	
0	
NR	

2. The growing use of ICT devices present an increase in demands for electricity.

The graph below shows the distribution of major energy sources that the world used in 2005.



b. Evaluate the options that an organization can take to reduce electricity usage by common ICT equipment.

Skill level 4	
4	
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