Cambridge O Level

**Cambridge Assessment International Education**
Cambridge Ordinary Level

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**COMPUTER SCIENCE** **2210/11**

Paper 1 Theory **May/June 2019**

**1 hour 45 minutes**

Candidates answer on the Question Paper.

No Additional Materials are required.

No calculators allowed.

**READ THESE INSTRUCTIONS FIRST**

Write your centre number, candidate number and name in the spaces at the top of this page.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.

No marks will be awarded for using brand names of software packages or hardware.

Any businesses described in this paper are entirely fictitious.

At the end of the examination, fasten all your work securely together.

The number of marks is given in brackets [ ] at the end of each question or part question.

The maximum number of marks is 75.

This document consists of **11** printed pages and **1** blank page.

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**1** Hexadecimal is used for MAC addresses.

Part of a MAC address is given:

97 – 5C – E1

Each pair of digits is stored as binary in an 8-bit register.

**(a)** Show what the binary register stores for each pair of the given digits.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **97** | | | | | | | | |
| **5C** | | | | | | | | |
| **E1** | | | | | | | | |

[6]

**(b)** Explain what is meant by a MAC address.

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..... [4]

**(c)** Give **two** other examples where hexadecimal can be used.

Example 1 .....

.....

Example 2 .....

.....

[2]

**2** Rajesh creates a logic circuit.

He uses three different logic gates in his circuit. Each logic gate has a maximum of **two** inputs.

He describes the logic of each gate.

**(a)** "The only time the output will be 1 is when both inputs are 1."

State the single logic gate .....

Draw the single logic gate:

[2]

**(b)** "The only time the output will be 1 is when both inputs are 0."

State the single logic gate .....

Draw the single logic gate:

[2]

**(c)** "The only time the output will be 0 is when both inputs are 1."

State the single logic gate .....

Draw the single logic gate:

[2]

**3** **Five** descriptions of different input or output devices are given in the table.

Complete the table by stating the **name** of each input or output device.

| Description | Name of device |
|---|---|
| This is an input device that works by shining a light onto the surface of a document. The light source is automatically moved across the document and the reflected light is captured by mirrors and lenses. | ..... |
| This is an input device where a laser or a light source is moved across an object. The width, height and depth of the object are measured to allow a model to be created. | ..... |
| This is a large input device that is usually fixed to a wall. A user can calibrate the device to make sure the sensors align with a projected image. The user can use either their finger or a special pen to make selections. | ..... |
| This is an output device that uses many small mirrors to reflect light towards a lens. This will display an image. | ..... |
| This is an output device that creates an object by building layer upon layer of material. | ..... |

[5]

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**4** **(a)** Lola is concerned about the risks to her computer when using the Internet.

She wants to use some security methods to help protect her computer from the risks.

Identify a security method she could use for each of the following risks. Each security method must be different.

Describe how each security method will help protect Lola's computer.

**(i)** Computer virus

Security method .....

Description .....

.....

.....

.....
[3]

**(ii)** Hacking

Security method .....

Description .....

.....

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.....
[3]

**(iii)** Spyware

Security method .....

Description .....

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.....
[3]

**(b)** Lola is also concerned that the data she stores could be subject to accidental damage or accidental loss.

**(i)** State **three** ways that the data Lola stores could be accidentally damaged or accidentally lost.

1 .....

.....

2 .....

.....

3 .....

.....

[3]

**(ii)** Give **two** methods that Lola could use to help keep her data safe from accidental damage or accidental loss.

1 .....

.....

2 .....

.....

[2]

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**5** The following text is stored as a text file:

| |
|---|
| She sells sea shells on the seashore. The shells that she sells are sea shells I am sure. |

Explain how lossless compression would compress this file.

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..... [5]

**6** A law company holds a lot of sensitive data about its clients.

**(a)** It currently requires employees to enter a username and a password to log-in to an account. Each password must be 8 letters.

The company wants to increase the security of the log-in system.
Identify **two** improvements the company could use to make the log-in system more secure.

Explain how each improvement increases security.

Improvement 1 .....

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Explanation .....

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Improvement 2 .....

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Explanation .....

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[4]

**(b)** The law company wants to purchase a new file server.

The company can purchase a server with either solid state storage or magnetic storage. After discussion, it decides to purchase a file server with magnetic storage.

Explain why the company chose magnetic storage rather than solid state storage.

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..... [4]

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**(c)** The law company also uses optical storage.

Give **three** different examples of optical storage.

1 .....

2 .....

3 .....
[3]

**7** Annie writes a paragraph of text as an answer to an examination question about programming languages.

Using the list given, complete Annie's answer by inserting the correct **six** missing terms. Not all terms will be used.

- Assembly
- Converter
- Denary
- Hexadecimal
- High-level language
- Low-level language
- Machine Code
- Source Code
- Syntax
- Translator

The structure of language statements in a computer program is called the

..... . A programming language that uses natural

language statements is called a ..... . When programs

are written in this type of language they need a ..... to

convert them into ..... .

A programming language that is written using mnemonic codes is called a

..... . An example of this type of language is

..... language.
[6]

**8** An art gallery has a website that is used to display and sell art.

**(a)** The gallery uses Secure Socket Layer (SSL) to provide a secure connection when selling art.

Describe the process of SSL and how it provides a secure connection.

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..... [6]

**(b)** The art gallery also uses a firewall.

**Six** statements are given about firewalls.

**Tick** (✓) to show if the statement is **True** or **False**.

| **Statement** | **True** (✓) | **False** (✓) |
|---|---|---|
| Firewalls are only available as hardware devices | | |
| Firewalls allow a user to set rules for network traffic | | |
| Firewalls will automatically stop all malicious traffic | | |
| Firewalls only examine traffic entering a network | | |
| Firewalls encrypt all data that is transmitted around a network | | |
| Firewalls can be used to block access to certain websites | | |

[6]

**(c)** The art gallery is concerned about computer ethics relating to its website.

Explain what is meant by computer ethics **and** why the art gallery is concerned about computer ethics.

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..... [4]

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