



Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

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COMPUTER SCIENCE

0478/11

Paper 1 Theory

October/November 2018

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 syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

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

1 (a) Computer files can be saved in different file formats.

Four file formats and four file types are given.

Draw a line to match each file format to the most suitable file type.

| File format | File type |
|-------------|------------|
| .jpeg | Text file |
| .mp3 | Image file |
| .mp4 | Audio file |
| .txt | Video file |

[3]

(b) Jamelia wants to store an image file. The image has an 8-bit resolution and is 150 pixels by 100 pixels in size.

Calculate the file size of the image. Give your answer in kilobytes (kB). Show all of your working.

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File size kB

[3]

- (c) Large files can be compressed to reduce their file size.

Two types of compression that can be used are lossy and lossless.

Explain how a file is compressed using lossless compression.

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..... [3]

- (d) The table contains **four** different file formats that use compression.

Tick (✓) to show whether each file format uses **lossy** or **lossless** compression.

| File format | Lossy (✓) | Lossless (✓) |
|-------------|--------------|-----------------|
| .jpeg | | |
| .mp3 | | |
| .mp4 | | |
| .zip | | |

[4]

2 (a) Six binary or hexadecimal numbers and six denary conversions are given.

Draw a line to connect each binary or hexadecimal number to the correct denary conversion.

| Binary or hexadecimal | Denary |
|-----------------------|--------|
| 01001011 | 75 |
| 4E | 78 |
| 11011010 | 157 |
| 10011101 | 167 |
| A7 | 25 |
| 19 | 218 |

[5]

(b) Hexadecimal is often used by computer programmers to represent binary values.

Explain why computer programmers may choose to use hexadecimal.

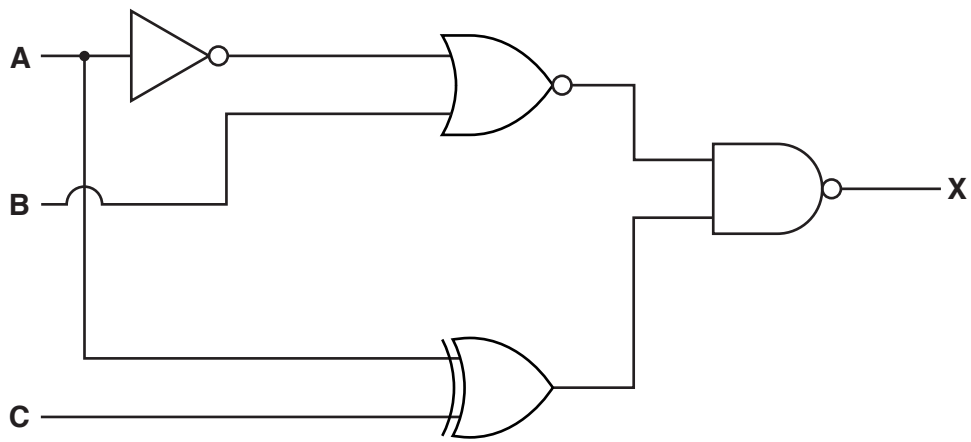
.....

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..... [2]

3 A logic circuit is shown:



(a) Complete the truth table for the given logic circuit.

| A | B | C | Working space | X |
|---|---|---|---------------|---|
| 0 | 0 | 0 | | |
| 0 | 0 | 1 | | |
| 0 | 1 | 0 | | |
| 0 | 1 | 1 | | |
| 1 | 0 | 0 | | |
| 1 | 0 | 1 | | |
| 1 | 1 | 0 | | |
| 1 | 1 | 1 | | |

[4]

(b) Explain the difference between the functions of an AND gate and an OR gate.

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..... [3]

4 Phishing and pharming are two examples of online security threats to a computer system.

(a) Explain what is meant by phishing and pharming.

Phishing

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Pharming

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[4]

(b) Identify **two** other online security threats to a computer system.

Security threat 1

Security threat 2

[2]

(c) Give **two** security measures that can help to protect a computer system from online security threats.

Security measure 1

Security measure 2

[2]

- (c) A sports events company uses a digital camera attached to a drone (small flying system), to video their events from the sky.

The video is stored as it is captured, on a device that is attached to the drone.

- (i) Circle the most suitable type of storage to store the video.

Optical

Magnetic

Solid state

[1]

- (ii) Explain the reasons for your choice in **part (c)(i)**.

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..... [2]

- 6 Two examples of output devices are a 3D printer and a 3D cutter.

- (a) The table contains **four** statements about 3D printers and 3D cutters.

Tick (✓) to show which statements apply to each output device, some statements may apply to both output devices.

| Statement | 3D printer (✓) | 3D cutter (✓) |
|--|-------------------|------------------|
| Outputs a physical 3D product | | |
| Uses a high powered laser to create the output | | |
| Creates 3D prototypes | | |
| Uses layers of material to create the output | | |

[4]

- (b) Identify the software used to create the computerised designs for 3D printing.

..... [1]

(c) A Digital Light Projector (DLP) is another example of an output device.

Describe how a DLP displays an image.

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..... [3]

7 Computers can use different methods of transmission to send data from one computer to another. Parallel data transmission is one method that can be used.

(a) Explain what is meant by parallel data transmission.

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..... [2]

(b) Give **one** benefit and **one** drawback of parallel data transmission, compared to serial data transmission, over short distances.

Benefit

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Drawback

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..... [2]

(c) Give **one** example where parallel data transmission is used.

..... [1]

8 Kamil correctly answers an examination question about a number of internet terms.

Six different terms have been removed from Kamil's answer.

Complete the sentences in Kamil's answer, using the list given. Not all terms in the list need to be used.

- browser
- connection
- domain name server (DNS)
- Internet
- Internet Service Provider (ISP)
- IP address
- MAC address
- network
- protocol
- uniform resource locator (URL)
- webpages
- hypertext mark-up language (HTML)

A is a program that allows a user to view

An is a company that provides a connection to access the

The main that governs the transmission of data using the Internet is http.

The is provided by the network, and given to each device on the network.

[6]

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