AQA

Please write clearly in block capitals.

Centre number | | | | | | Candidate number | | | | |

Surname _____

Forename(s) _____

Candidate signature _____

Level 3 Technical Level IT

FUNDAMENTAL PRINCIPLES OF COMPUTING

Unit Number: Y/507/6424

Monday 19 June 2017 Morning Time allowed: 2 hours

Materials
For this paper you must have:
- a ruler.

You may use:
- a calculator
- stencils or other drawing equipment (eg flowchart stencils).

Instructions
- Use black ink or black ball-point pen.
- Fill in the boxes at the top of this page.
- Answer all questions in **both** sections.
- You must answer each question in the space provided. Do not write outside the box around each page or on crossed through pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.
- If you need more space use the additional pages at the back of this booklet.

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.
- There are 50 marks in **Section A** and 30 marks in **Section B**.

Advice
- In all calculations, show clearly how you work out your answer.
- Use diagrams, where appropriate, to clarify your answers.
- You are expected to use a calculator where appropriate.
- You are reminded of the need for good English and clear presentation in your answers.

For Examiner's Use	
Examiner's Initials	
Question	Mark
1	
2	
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9	
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11	
12	
13	
14	
15	
TOTAL	

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ANSWER IN THE SPACES PROVIDED

Section A

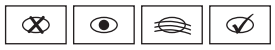
Answer **all** questions in this section.

Total for this section: 50 marks

In the multiple-choice questions, only **one** answer per question is allowed.

For each answer completely fill in the circle alongside the appropriate answer.

CORRECT METHOD 

WRONG METHODS 

If you want to change your answer you must cross out your original answer as shown. 

If you wish to return to an answer previously crossed out, ring the answer you now wish to select as shown. 

0 1 Which **one** of the following is both an input and an output device?

A Barcode reader 

B Keyboard 

C Scanner 

D Touch screen 

[1 mark]

1

0 2 There are several types of Read Only Memory (ROM) chip.

0 2 . 1 One of these is the Erasable Programmable ROM chip (EPROM).

What method is used to erase data stored on the EPROM?

[1 mark]

_____

_____

0 2 . 2 State **two** uses of a ROM chip.

[2 marks]

1 _____

_____

2 _____

_____

3

0 3 The Central Processing Unit (CPU) of a modern computer contains cache memory.

0 3 . 1 Which type of cache memory is the fastest to access?

A Level 1 ⬭

B Level 2 ⬭

C Level 3 ⬭

D Level 4 ⬭

[1 mark]

0 3 . 2 Explain how cache memory speeds up the operation of a computer.

[3 marks]

_____

_____

_____

_____

_____

_____

4

Turn over for the next question

0 4 . 1 Which component of a computer system responds to a hardware interrupt?

A Basic Input/Output System ⬭

B Central Processing Unit ⬭

C Hard Disk Drive ⬭

D Random Access Memory ⬭

[1 mark]

0 4 . 2 Name the type of interrupt that cannot be ignored.

[1 mark]

_____

_____

0 4 . 3 Give an example of how a software interrupt can be generated.

[1 mark]

_____

_____

3

0 5 The result of arithmetic operations in computer programs depends on the order of operator precedence.

0 5 . 1 What does 'order of operator precedence' mean and how does it work?

[2 marks]

_____

_____

_____

_____

0 5 . 2 This expression 3 + (2 / 5) * 2 produces the result 3.8

Show how changing the order of precedence can give **two** other results.

[4 marks]

6

0 6 Two components within a modern CPU are the Arithmetic Logic Unit (ALU) and the Control Unit (CU).

Describe what each does.

[4 marks]

Arithmetic Logic Unit

Control Unit

4

0 7 The Control Unit within a modern computer's CPU is regulated to a particular speed of operation. The clock that regulates it depends on the vibrations of a quartz crystal to keep accurate time.

0 7 . 1 Explain how the computer's internal clock regulates the speed at which instructions are executed.

[2 marks]

0 7 . 2 Two microprocessors run at the same clock speed but one appears to be faster than the other. Explain how this might be possible.

[2 marks]

0 7 . 3 Describe an effective way to compare the performance of CPUs.

[2 marks]

6

0 8 Some hard disk drives (HDDs) become fragmented over time.

0 8 . 1 What noticeable effect might this have on the computer's performance?

[1 mark]

0 8 . 2 Explain why files become fragmented and how this affects the performance.

[3 marks]

0 8 . 3 What type of utility software could be used to rectify this problem?

A Data compression ⬭

B Disk cleaner ⬭

C Disk optimiser ⬭

D Task scheduler ⬭

[1 mark]

0 8 . 4 Why is it less likely that fragmentation of a disk drive will occur on an Apple computer than a Windows computer?

[2 marks]

7

0 9 System software is regularly updated by software companies.

Explain the need for updates and why it is important to check regularly for updates.

[3 marks]

3

1 0 Describe the function of thermal paste and where it is used.

[2 marks]

2

1 1 . 1 Which **one** of these storage devices is most likely to be found in a tablet computer?

A DVD drive ○

B Hard Disk Drive ○

C Magnetic Disk Drive ○

D Solid State Drive ○

[1 mark]

1 1 . 2 Explain why the choice you made in **1 1 . 1** is the most suitable for a tablet computer.

[3 marks]

4

Turn over for the next question

1 2 Sensitive internal components of a computer can be damaged by electrostatic discharge (ESD).

1 2 . 1 Describe how components can be damaged by ESD.

[2 marks]

1 2 . 2 Name **two** items a user might make use of to prevent ESD when working on a computer.

[2 marks]

Item 1 _____

Item 2 _____

4

1 3 Computer programs are sometimes written in a combination of high- and low-level languages. For example, a program mostly written in C++ (a high-level language) may contain sections written in Assembly Language (a low-level language).

Using an example, explain why this is done.

[3 marks]

3

Section B

Answer **all** questions in this section.

Total for this section: 30 marks

1 4 You have been asked to advise a client about purchasing a tablet computer.

Your client is an employee of a company with an existing network and wants to use the tablet for both personal and business use.

1 4 . 1 Name the **three** main operating systems that should be considered.

[3 marks]

1 _____

_____

2 _____

_____

3 _____

_____

1 4 . 2 Analyse the advantages and disadvantages of tablets using each of the operating systems you have named in **1 4 . 1**

[8 marks]

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Turn over ▶

1 4 . 3 Many employees now bring their own portable devices to work. These are often connected to the organisation's network to carry out work tasks.

Explain what issues might need to be considered by your client's employer before allowing employees to 'Bring Your Own Device' (BYOD).

Include both positive and negative aspects.

[8 marks]

19

1 5 An organisation keeps records of all its clients on a large database.

1 5 . 1 Describe **three** features of database software that allow records to be input and manipulated.

[6 marks]

1 5 . 2 Name **one** piece of legislation that makes it a requirement for data to be stored securely.

[1 mark]

1 5 . 3 Describe **two** ways to check that data stored is accurate.

[4 marks]

END OF QUESTIONS

11

If needed, use the following pages to continue your answers. Write the question number beside your answer.

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