AQA

Please write clearly in block capitals.

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

Surname _____

Forename(s) _____

Candidate signature _____

# Level 3 Technical Level

## IT: CYBER SECURITY
## IT: NETWORKING
## IT: PROGRAMMING
## IT: USER SUPPORT

Unit 1 Fundamental principles of computing

Monday 4 June 2018 Morning Time allowed: 2 hours

**Materials**

For this paper you must have:
- a ruler
- a scientific calculator (non-programmable)
- 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.
- You must answer the questions in the spaces provided. Do **not** write outside the box around each page or on blank 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**.
- Both sections should be attempted.

**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 | |
|---|---|
| Question | Mark |
| 1–5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | |
| 13 | |
| 14 | |
| TOTAL | |

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## Section A

Answer **all** questions in this section.

In 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. 

You may do your working in the blank space around each question but this will not be marked. Do **not** use additional sheets for this working.

**0 1** Which **one** of the following defines the role of the accumulator in a CPU?

**[1 mark]**

**A** a bus ⬭

**B** a database ⬭

**C** a pipeline ⬭

**D** a register ⬭

**0 2** Which **one** of the following is the number of bits in a nibble?

**[1 mark]**

**A** 2 ⬭

**B** 4 ⬭

**C** 8 ⬭

**D** 16 ⬭

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**0 3** Which **one** of the following is Linux an example of?

**[1 mark]**

**A** an operating system ⬭

**B** management system software ⬭

**C** a utility program ⬭

**D** a software library ⬭

**0 4** Which **one** of the following types of data does a .jpg file store?

**[1 mark]**

**A** alphanumeric ⬭

**B** numeric ⬭

**C** signal ⬭

**D** image ⬭

**0 5** Which **one** of the following does an Extensible Firmware Interface (EFI) or Unified EFI provide an interface with?

**[1 mark]**

**A** the operating system ⬭

**B** utility software ⬭

**C** hardware ⬭

**D** application software ⬭

**5**

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**0 6** Explain why solid-state drives (SSDs) do **not** need cooling.

**[2 marks]**

_____

_____

_____

_____

**2**

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**0 7** Data and information are terms that have specific meanings in Information Technology.

**0 7 . 1** Give **two** different examples of information.

**[2 marks]**

Example 1 _____

_____

Example 2 _____

_____

**0 7 . 2** Explain how information is different from data.

**[4 marks]**

_____

_____

_____

_____

_____

_____

_____

_____

**Question 7 continues on the next page**

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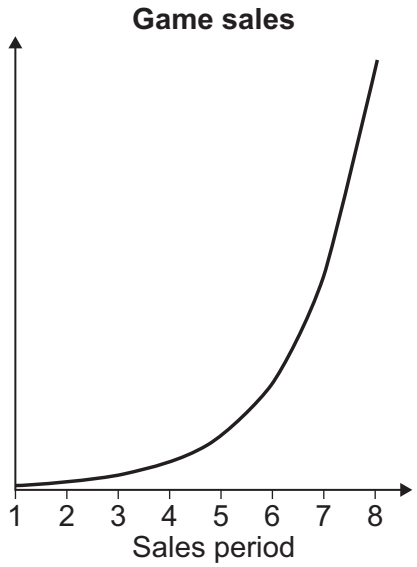
**0 7 . 3** **Figure 1** shows the sales trend for a new computer game.

**Figure 1**




Explain why the information presented in **Figure 1** might be misleading.

**[2 marks]**

8

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**0 8** Explain why it would be difficult for a computer to process written English or French as a programming language.

**[4 marks]**

4

**Turn over for the next question**

*Do not write outside the box*

**0 9** PROLOG is a logic programming language that remains popular for certain applications.

**0 9 . 1** State **one** type of application that PROLOG could be used for.

**[1 mark]**

**0 9 . 2** Describe how the logic programming used by PROLOG is different from a program written in a high-level language such as Java or Python.

**[3 marks]**

**4**

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**1 0** A multi-user computer can be accessed by many users at the same time.

**1 0 . 1** Explain how this is possible.

**[4 marks]**

**1 0 . 2** Explain how the use of security software can help to increase the security of data in a multi-user system.

**[6 marks]**

**10**

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**1 1** A holiday company regularly asks for feedback from customers.

**1 1 . 1** Give **one** example of a question that would be asked to obtain quantitative data.

**[1 mark]**

**1 1 . 2** Give **one** example of a question that would be asked to obtain qualitative data.

**[1 mark]**

**1 1 . 3** Explain why it is more difficult to analyse qualitative responses than quantitative responses.

**[4 marks]**

**6**

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**1 2** The fetch-execute cycle is used to control the sequence of instructions that the Central Processing Unit (CPU) carries out.

Describe the sequence of steps involved in the fetch-execute cycle.

**[9 marks]**

9

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**1 3** Certain types of hardware can function as client devices.

**1 3 . 1** Name **one** piece of hardware that can function as a client device.

**[1 mark]**

_____

_____

**1 3 . 2** Name **one** piece of systems software that can report on the status of a client device.

**[1 mark]**

_____

_____

**2**

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**Turn over for Section B**

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**ANSWER IN THE SPACES PROVIDED**

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## Section B

Answer **all** questions in this section.

**1 4** A home computer user runs a small online store selling model trains.

They want to buy a new computer system to do the following:

- store records of their model train collection
- online banking
- record financial transactions
- browse the internet
- stream or download, then watch videos
- send emails
- use social media.

**1 4 . 1** Discuss the hardware features of a suitable computer system for this user.

**[12 marks]**

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**1 4 . 2** Suggest **three** appropriate pieces of software for this user and give a reason for each.

**[6 marks]**

Answer 1 _____

Reason _____

Answer 2 _____

Reason _____

Answer 3 _____

Reason _____

**1 4 . 3** Explain how the user can be sure that any software purchased will run efficiently on the computer.

**[2 marks]**

**Question 14 continues on the next page**

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**1 4 . 4** Some of the tasks listed in Question 14 could be carried out using shareware, freeware or open source software.

Discuss the factors that the user would have to take into account when choosing whether to use these types of software.

**[6 marks]**

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**1 4 . 5** Explain how an operating system on the user's computer keeps track of files and folders.

**[4 marks]**

30

**END OF QUESTIONS**

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

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**ANSWER IN THE SPACES PROVIDED**