AQA Level 3 Technical Level IT
Fundamental principles of computing

Unit Number: Y/507/6424

Specimen Question Paper

Time allowed: **2 hours**

Instructions
- Use black ink or black ball-point pen.
- 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.

Information
- There are two sections to this paper
- Both sections should be attempted
- Learners should spend approximately 60 minutes on Section A and 60 minutes on Section B
- There are 80 marks available on this paper
- The marks for the questions are shown in brackets

Advice
- Please read each question carefully before starting

Please write clearly, in block capitals, to allow character computer recognition.

Centre number ☐☐☐☐☐ Learner number ☐☐☐☐

Surname ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

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Learner signature _____

Section A

Answer **ALL** question(s) in this section

Total for this section: 50 marks

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 The purpose of main memory is to

A control data used by the CPU ⬭

B store instructions and data ⬭

C store backups of files ⬭

D schedule processes ⬭

[1 mark]

0 2 Programmable Read Only Memory (PROM) can

A can be written to many times ⬭

B can be erased ⬭

C can be erased once ⬭

D can be written to once ⬭

[1 mark]

0 3 This image shows the ports on the back of a computer

The port identified by an arrow in this image is

A HDMI ⬭

B USB ⬭

C Firewire ⬭

D VGA ⬭

[1 mark]

0 4 The definition of POST in relation to the BIOS is

A Ports Open in Synchronous Timing ⬭

B Power-On Self-Test ⬭

C Programmable Operation of System Testing ⬭

D Portable Operating System Transport ⬭

[1 mark]

0 5 This truth table shows the expected results output when true (1) and false (0) values are input for values A and B.

Input A	Input B	Output
0	0	0
0	1	1
1	0	1
1	1	1

The logic gate represented by this truth table is

A AND ⬭

B NOR ⬭

C XOR ⬭

D OR ⬭

[1 mark]

0 6 Which statement is true about the FAT32 filing system?

A Has a standard partition limit of 2 terabytes of data ⬭

B Not used on flash memory or solid-state memory cards ⬭

C Automatically repairs hard drive errors ⬭

D Keeps a journal of transactions ⬭

[1 mark]

0 7 5.43 terabytes is equivalent to

A 5,430 megabytes ⬭

B 5,430,000,000 bytes ⬭

C 5,430,000,000,000 bytes ⬭

D 5,430,000 kilobytes ⬭

[1 mark]

0 8 Interpreters and compilers convert source code into machine code. Which of the following statements is true for **interpreters**?

A Links modules together ⬭

B Generates intermediate object code ⬭

C Translates the source code one statement at a time ⬭

D Generates error messages after the whole code is scanned ⬭

[1 mark]

0 9 This is the specification for a **tablet** computer:

Processor:	Quad Core 2500 MHz
Memory:	3 Gb
Architecture:	64 bit
Storage:	32 GB internal storage
Expansion:	Micro SD up to 128 GB
Battery size:	3000 mAh
Display:	5.5 inches
Resolution:	1440 x 2560 pixels
Touchscreen:	Multi-touch
Ports:	Micro USB, micro HDMI, 3.5mm audio out

(a) The micro USB port can be used to charge the tablet computer. Identify **one** other way in which the micro USB port could be used.

[1 mark]

_____

(b) The CPU is a quad core processor. Give one purpose of multi-core processors.

[1 mark]

(c) Describe the Fetch-Execute Cycle of the CPU.

[2 marks]

(d) Give two possible disadvantages of a 64 bit computer.

[2 marks]

(e) The tablet has 32 gigabytes of internal storage. This has been calculated using the International System of Units (SI) definition of gigabytes.

Calculate the size of the internal storage of the tablet computer in **mebibytes**. Show your working.

[3 marks]

1 0 The tablet computer has an email application pre-installed.

(a) Sending and receiving emails are two features of email applications. Give **two** other **features** of email applications.

[2 marks]

Feature 1:

Feature 2:

The owner of the tablet computer has decided to install some anti-malware software that is freeware.

(b) Describe **two** features of **anti-malware** software.

[4 marks]

Feature 1:

Feature 2:

(c) State **two** disadvantages of installing **freeware**.

[2 marks]

Disadvantage 1:

Disadvantage 2:

1 1 A programmer uses JavaScript and C++ which are high level programming languages.

(a) Identify a situation when the programmer may use JavaScript in preference to C++.

[1 mark]

(b) Describe the difference between Prolog and languages such as C and Java.

[2 marks]

(c) Give a situation when the programmer might use assembly language.

[1 mark]

The programmer sometimes uses ASCII and extended ASCII codes to represent characters.

(d) Contrast ASCII and extended ASCII codes.

[2 marks]

1 2 Organisations employ technicians to maintain their computer equipment. As part of their job, technicians will use utility programs.

(a) Explain why a technician would need to use a disc defragmentation utility.

[2 marks]

(b) Give **two** reasons why a technician might want to use remote desktop protocol (RDP) when working from home.

[2 marks]

A technician will be expected to be familiar with a range of operating systems.

(c) Give two reasons why a technician might configure an operating system via a command line interface rather than the graphical interface.

[2 marks]

1 3 When a computer is first turned on, the BIOS will be loaded.

(a) Describe how the BIOS manages booting an operating system.

[2 marks]

Some computers are supplied with internal PSUs and other computers are supplied with external PSUs.

(b) Evaluate the suitability of an **internal** or **external** PSU for a portable computer or console.

[3 marks]

The memory of the computer is organised into various registers.

(c) Contrast memory **buffer** register and memory **address** register.

[2 marks]

1 4 Illustrate the advantages and disadvantages of supercomputers and their potential applications.

[5 marks]

Section B

Answer **all** question(s) in this section

1 5 Pete has a large collection of music and films stored on one of his computers.

He buys an external storage device because he wants to share his music and film files between two computers that have different operating systems: one uses OSX, the other uses Microsoft Windows.

- Pete would like to be able to read and write to the device from both computers
- He will connect the device via USB to one computer at a time
- Some individual files are over 8GB

a) Identify three file systems that he could use to format the external device and describe how each is suitable in this situation.

[8 marks]

b) Pete is worried he could lose his external storage device.

Identify two other methods of backing up a music and film collection and assess the advantages and disadvantages of each.

[7 marks]

1 6 Accuracy is a key metric for ensuring quality of data.

(a) State other three metrics that can be used to ensure quality of data.

[3 marks]

(b) A company wants to research the use of smartphones among young people.

For each of your three metrics, explain how you could ensure quality of data in this research.

[8 marks]

(c) The company wants to separate its research into qualitative and quantitative data about smartphone use.

Define qualitative and quantitative data and give an example how each type could be used to research into smartphones.

[4 marks]

There are no questions printed on this page

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