



Rewarding Learning

ADVANCED SUBSIDIARY (AS)
General Certificate of Education
2023

Centre Number

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Candidate Number

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Digital Technology

Assessment Unit AS 2

assessing

Fundamentals of
Digital Technology



SDT21

[SDT21]

MONDAY 22 MAY, AFTERNOON

TIME

1 hour 30 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

You must answer the questions in the spaces provided.

Do not write outside the boxed area on each page or on blank pages.

You are not permitted to use any calculating aid in this paper.

Complete in black ink only. **Do not write with a gel pen.**

Answer **all six** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 100.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

Quality of written communication will be assessed in Questions **1(e)**, **4(e)** and **5(c)**.

13792



24SDT2101

1 (a) Complete the shaded cells in the following table.

Name	Number of bytes
Gigabyte	
_____ byte	2^{10}
_____ byte	2^{20}
Terabyte	

[4]

(b) How many different values can be represented using 8 bits?

Write your answer as a decimal value.

[1]

(c) Show how the decimal number **99** is represented using 8 bits.
You must show your working.

[2]



(d) Consider the following byte.

1	1	1	0	0	0	0	1
---	---	---	---	---	---	---	---

(i) The byte contains a two's complement binary number.

Showing all your working, convert this number to decimal.

[3]

During data transmission, the most significant bit of this byte flips.

(ii) Show the byte after it has been transmitted.

[1]

(iii) Without doing any calculations, explain how you know the sign of the number has changed.

[2]

[Turn over





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[Turn over



24SDT2105

- 2 (a) The table below records the marks obtained by two students in a test. The pass mark in the test was 40%.

Student	Mark (%)	Teacher's Comment
A	45	Repeat the test
B	23	Must take a new test

Referring to the table, explain what is meant by each of the following.

Data

[2]

Information

[2]

Knowledge

[3]



(b) The quality of information can be affected by the accuracy of the data on which it is based.

Identify three other factors which can affect the quality of information.

1. _____

2. _____

3. _____ [3]

[Turn over



3 (a) Part of the data entry screen which allows a user to change a password is shown below.

New password

Re-enter password *Required field

(i) Name and describe the method of data verification used in the screen.

Name _____

Description _____

_____ [3]

(ii) Name the data validation method used in the screen.

_____ [1]



(b) Describe each of the following data validation methods.

Range check

Lookup

[4]



(c) A Customer ID consists of 5 digits. The rightmost digit is a Modulus 11 check digit.

Show how the computer will determine that **43177** is an invalid Customer ID. You must show all your working.

[5]





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24SDT2111

4 (a) One of the factors which can affect the speed of processing is the clock speed of the processor.

(i) Explain how the clock speed can affect the speed of processing.

[3]

(ii) Name and describe one other factor which can affect the speed of processing.

Name _____

Description _____

[4]



(b) One component of a computer system is secondary storage.

Explain what is meant by secondary storage.

[3]

(c) Identify three ways in which text can be input on a smartphone.

1. _____

2. _____

3. _____

[3]



(d) Describe how zipping is used on a typical computer.

[3]



(f) Explain the difference between file backup software and archive software.

[4]





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24SDT2117

5 (a) Describe the features of batch processing which make it unsuitable for flight reservations.

[6]

(b) Describe the main features of a multithreading operating system.

[3]



(c) The developer of a new business application is considering two different ways of delivering the software.

- Option 1** Users download the software
- Option 2** Users access the software via the Web

Evaluate these two options if regular updates to the software will be released.

Quality of written communication will be assessed in this question.

[6]



6 (a) Explain each of the following Web terms.

Web server _____

Internet Service Provider (ISP) _____

[6]

(b) Describe how Hypertext Markup Language (HTML) is used to create a web page.

[4]





(c) Describe how a cascading style sheet (CSS) is used to control the appearance of pages in a website.

[3]

(d) Explain how each of the following are used to ensure that data transferred over the Internet is secure.

Public key _____

Private key _____

[4]

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24SDT2122





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24SDT2123

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Question Number	Marks
1	
2	
3	
4	
5	
6	

Total Marks	
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Examiner Number

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