



Rewarding Learning

ADVANCED SUBSIDIARY (AS)
General Certificate of Education

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]

Assessment

TIME

1 hour 30 minutes.

Assessment Level of Control:

Tick the relevant box (✓)

Controlled Conditions	
Other	

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 five** 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 **2(c)**, **3(c)** and **5(e)**.



1 The two's complement system is used to represent positive and negative numbers in binary.

(a) Convert the following decimal numbers to two's complement using 8 bits.

+71

-71

[4]



(b) Convert the following two's complement numbers to decimal.

01101001_2

11101001_2

[4]

(c) Write these units in descending order of size.

Kilobyte

Byte

Terabyte

Gigabyte

[1]

(d) n bits can be used to represent 2^n different binary values. List these values if $n = 3$.

[2]

[Turn over



(e) A movie requires 16 gigabytes of storage.

How long will it take to download this movie if the download speed is **64** megabytes per second? You must show your working.

_____ seconds [4]





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12803

[Turn over



24SDT2105

2 (a) The table below shows typical data transfer rates for 3G and 4G broadband.

	Downloading Mbps	Uploading Mbps
3G	6	2
4G	150	40

By referring to the shaded cell, explain what is meant by each of the following.

Data

Information

[4]



(b) Apart from being up to date and relevant, describe three other factors that can affect the quality of information.

1. _____

2. _____

3. _____

[6]





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[Turn over



24SDT2109

3 (a) In a batch of invoices, the invoice numbers are used to create a hash total.

(i) Describe how this hash total is created.

[1]

(ii) Explain how this hash total can detect errors.

[3]

(iii) Identify a field on a typical invoice which could be used for a control total.
You must justify your answer.

[3]



(b) The rightmost digit in the product code **42358** is a modulus 11 check digit.

Show how the value of the check digit was calculated.

[6]

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[Turn over



24SDT2111



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[Turn over



24SDT2113

4 (a) A computer system consists of a number of internal components.

Describe the purpose of each of the following.

Clock

Port

[4]

An automated teller machine (ATM) enables bank customers to perform a range of financial transactions.

(b) Describe the purpose of two input devices in a typical ATM.

1.

2.

[4]



(c) Describe the purpose of two output devices in a typical ATM.

1. _____

2. _____

[4]

(d) Describe two different ways in which a typical ATM can provide feedback to the user.

1. _____

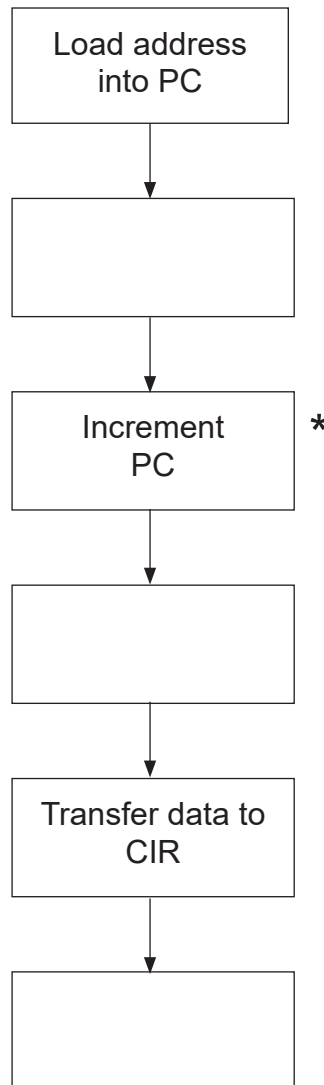
2. _____

[4]

[Turn over



The following flowchart shows some of the processes of the fetch-execute cycle.



(e) Complete the three blank processes.

[6]



(f) Explain the purpose of the process marked *.

[3]

[Turn over

12803



24SDT2117

5 (a) Explain each of the following web technology terms.

Cookie

Portal

Web hosting

[9]



HTML is used to create web pages.

(b) Describe how each of the following HTML tags is used.

The anchor tag

The image tag

[6]



Consider the following section of HTML code.

```
<ul>  
  <li>Unit AS 1: Approaches to Systems Development </li>  
  <li>Unit AS 2: Fundamentals of Digital Technology </li>  
  <li>Unit A2 1: Information Systems </li>  
</ul>
```

(c) Describe the output from this HTML code.

[2]

(d) Explain the changes required to this HTML code to produce an ordered list.

[2]



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24SDT2122





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24SDT2123

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Question Number	Marks
1	
2	
3	
4	
5	

Total Marks	
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Examiner Number

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24SDT2124