



*Rewarding Learning*

**ADVANCED SUBSIDIARY (AS)**  
**General Certificate of Education**  
**2019**

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\*

**FRIDAY 24 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 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 **1(f)**, **3(d)** and **4(c)**.



1 A file requires 2 gigabytes of storage.

(a) How long will it take to download this file if the download speed is 64 megabytes per second? You must show all your working.

\_\_\_\_\_ seconds [4]

(b) Convert the decimal number **–67** to a two's complement binary number using 8 bits. You must show all your working.

[3]



- (c) Convert the two's complement binary number  $01111111_2$  to decimal. You must show all your working.

[2]

- (d) How many positive decimal numbers can be represented using an 8 bit two's complement system?

[1]

- (e) How many negative decimal numbers can be represented using an 8 bit two's complement system?

[1]

[Turn over]



**(f)** In the past, character sets were restricted to 128 characters.

However, computers can now represent many more characters.

Explain and evaluate this development.

**Quality of written communication will be assessed in your answer.**

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[6]

[6]





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11995

**[Turn over**



\*24SDT2105\*

- 2 The table below shows some annual sales for a shop.

| Product        | Actual Sales (£) | Target Sales (£) |
|----------------|------------------|------------------|
| Chocolate bars | 32 661           | 35 000           |
| Ice cream      | 18 974           | 20 000           |
| Sweets         | 42 562           | 40 000           |

- (a) By referring to the shaded cell in the table, explain what is meant by each of the following.

Data

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[2]

Information

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[2]

Knowledge

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[3]



(b) Errors can occur during data entry.

(i) Explain how verification can be used to detect errors.

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[4]

(ii) Explain what is meant by a transposition error.

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[2]

[Turn over



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

Range check

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Type check

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Length check

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[6]





- (d) A chocolate bar has the product code 91167M where M represents the modulus 11 check digit.

Calculate the value for M, showing all your working.

M = \_\_\_\_\_ [5]



- 3 (a) Describe the role of each of the following during the fetch-execute cycle.

Program counter

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Current instruction register

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[4]



(b) Name and describe the three buses used during the fetch-execute cycle.

Name \_\_\_\_\_

Description \_\_\_\_\_

\_\_\_\_\_

Name \_\_\_\_\_

Description \_\_\_\_\_

\_\_\_\_\_

Name \_\_\_\_\_

Description \_\_\_\_\_

\_\_\_\_\_

[6]

[Turn over



(c) Explain how each of the following can influence the speed of a computer.

Processor type

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Cache memory

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[4]



**Quality of written communication will be assessed in your answer.**

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[6]

[6]

**[Turn over**

11995



\*24SDT2113\*

4 (a) Point of sale (POS) terminals are widely used in supermarkets.

(i) Identify four different input devices you would expect to find in a POS terminal.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_ [4]

(ii) Describe two ways in which a POS terminal will provide feedback.

1. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
2. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [4]



(b) Explain why batch processing is suitable for a payroll application but unsuitable for a stock control application.

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[4]

[Turn over



- Quality of written communication will be assessed in your answer.**

[illegible]

[6]





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**[Turn over**



**\*24SDT2117\***

5 (a) Explain the following web technology terms.

URL

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IP address

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[4]



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[6]

[6]

**[Turn over**

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**\*24SDT2119\***

(c) Explain each of the following HTML tags.

<body>

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<h1>

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<p>

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[6]





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**[Turn over**



**\*24SDT2121\***

(d) The following HTML code includes a cascading style sheet (CSS).

```
<html>
<head>
<style>

    body {background-color: lightblue;}

    h1 {font-family: arial;color: red;text-align: center;
font-size: 40px;}

    p {font-family: verdana; color: green;text-align:
center;font-size: 30px;}

</style>
</head>

<body>

<h1>Cascading Style Sheet</h1>

<p>CSS is a language that describes how the html web page
should be displayed</p>

</body>

</html>
```



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[5]

[5]

**THIS IS THE END OF THE QUESTION PAPER**

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\*24SDT2123\*

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| For Examiner's use only |       |
|-------------------------|-------|
| Question Number         | Marks |
| 1                       |       |
| 2                       |       |
| 3                       |       |
| 4                       |       |
| 5                       |       |

|             |  |
|-------------|--|
| Total Marks |  |
|-------------|--|

Examiner Number

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\*24SDT2124\*