



ADVANCED SUBSIDIARY (AS)
General Certificate of Education
2017

Centre Number

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Candidate Number

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Digital Technology

Assessment Unit AS 2
assessing
Fundamentals of
Digital Technology



[SDT21]
FRIDAY 2 JUNE, AFTERNOON

SDT21

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(c)**, **2(f)(ii)**, **3(d)**, **4(b)** and **5(d)(ii)**.

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- 1 (a) (i) How many bytes are there in each of the following?

A megabyte

A terabyte

[2]

- (ii) A file requires 4 megabytes of storage. How many files of this size could be held in a gigabyte? You must show your work.

[3]

- (b) The two's complement system can be used to represent positive and negative numbers.

- (i) Describe how negative numbers are represented in two's complement using 8 bits.

[2]



- (ii) Show how the decimal number **-64** can be represented as a two's complement binary number using 8 bits.

[3]

- (c) Compare the way in which characters are represented in ASCII and Unicode.

[5]

Turn over



- 2 (a) Describe each of these methods of data validation.

Length check

Format check

[4]

A retailer sells a range of products using its website.

Part of the data entry form used to place an order is shown in the diagram below.

Surname	<input type="text"/>
Email	<input type="text"/> *
Confirm Email	<input type="text"/>
Postcode	<input type="text"/>
* Required	



- (b) Identify the field from the form for which a presence check is being used. You must justify your choice.

[2]

- (c) Identify the field from the form for which a lookup is the most appropriate validation check. You must justify your choice.

[2]

- (d) Identify the field from the form for which data verification is being used. You must justify your choice.

[2]

[Turn over



(e) The user enters a postcode as shown in the diagram below.

Postcode BT1 3BG

By referring to this diagram, distinguish between data and information.

1

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- (f) Orders from customers are processed using batch processing

- (i) Explain what is meant by batch processing

[4]

- (ii) The order form also includes the fields **OrderID** and **TotalOrderValue**.

By referring to these fields, compare a hash total with a control total.

[5]

Turn over

ing L.



- 3 The software of a computer system includes an operating system and application software.

- (a) Describe the main features of a multi-tasking operating system.

1



(b) Describe each of the following utilities

Disk defragmenter

Archive softw

[8]

[Turn over

gl



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- (c) Application software includes generic software. With the aid of an example, explain what is meant by generic software.

1



(d) A company requires accounting software

Explain why off-the-shelf software might be better for the company than custom-built software in this case.

[6]

[Turn over

96 L.



*20SDT211

4 (a) (i) Describe how the program counter is used during the fetch-execute cycle.

1

(ii) Explain the difference between internal memory and secondary storage.

1



(iii) Describe two ways in which the processing speed of a PC can be improved.

1. _____

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For more information, contact the Office of the Vice President for Research and Economic Development at 319-273-2444 or research@uiowa.edu.

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4

[4]

(b) Command line and WIMP are two types of user interface

Evaluate these interfaces from the point of view of an experienced computer user.

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Turn on the light and the fan, and then turn off the light and the fan.

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Barcode for the document.

A standard 1D barcode is positioned horizontally across the page, consisting of vertical black bars of varying widths on a white background.

(c) Images can be stored using data compression.

Describe two advantages of data compression.

1. _____

2. _____

[4]



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(Questions continue overleaf)

[Turn over

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5 (a) Explain the difference between an intranet and the Internet.

1

(b) Describe the role of the World Wide Web Consortium (W3C).

1



(c) HTML is used to create web pages

(i) Explain the purpose of the anchor tag.

[2]

(ii) Produce the HTML code to display the following unordered list.

- Orange
 - Green
 - Blue

[3]

ing L.

Turn over



(d) Encryption is used when data is transmitted over a network.

(i) Explain why data is encrypted.

1

(ii) Compare the use of public and private keys in secure data encryption.

1



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Question Number	Marks
1	
2	
3	
4	
5	

Total Marks	
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Examiner Number

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