Centre Number

Candidate Number

Rewarding Learning

ADVANCED SUBSIDIARY (AS)
General Certificate of Education
2018

Digital Technology

Assessment Unit AS 2
assessing
Fundamentals of Digital Technology

SDT21

[SDT21]
FRIDAY 8 JUNE, 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.
Complete in black ink only. **Do not write with a gel pen.**
Answer **all five** questions.
You are not permitted to use any calculating aid in this paper.

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(g)**, **3(e)**, **4(e)** and **5(d)**.

11366

1 **(a)** Explain how both positive and negative numbers can be represented in binary using the two's complement system.

_____

_____

_____

_____

_____

_____

_____

_____ [4]

(b) Convert each of the following two's complement binary numbers into decimal. Show your working out.

00001111$_2$

_____

_____

_____

_____

11100001$_2$

_____

_____

_____

_____ [4]

11366

20SDT2102

ASCII is an example of a character set. It uses 7 bits.

(c) Explain what is meant by a character set.

_____

_____

_____

_____

_____

_____

_____ [4]

(d) How many characters can be represented in ASCII?

_____

_____ [1]

(e) ASCII uses 7 bits in a byte. Suggest a use for the 8th bit.

_____

_____

_____

_____ [2]

[Turn over

11366

20SDT2103

(f) The capacity of a particular hard drive is 1TB. Write down what 'TB' stands for and state how many gigabytes it contains.

TB _____

Number of gigabytes _____ **[2]**

(g) Discuss the benefit of using Unicode instead of ASCII as a character set.

_____

_____

_____

_____

_____

_____ **[3]**

11366

20SDT2104

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(Questions continue overleaf)

11366

20SDT2105

2 **(a)** Explain each of the following terms.

Data

_____

_____

Information

_____

_____

Knowledge

_____

_____ [3]

(b) List three factors, apart from accuracy, which can affect the quality of information.

1. _____

2. _____

3. _____ [3]

11366

20SDT2106

A book can be reserved at a library by completing a form. The librarian keys the data from these forms into a database.

(c) Explain how double entry can be used to detect errors in this case.

_____

_____

_____

_____

_____

_____ [3]

Four of the steps in the calculation of a modulus 11 check digit are listed below.

1. Each digit is given a weighting
3. The sum is calculated
4. The total is divided by 11 and the remainder obtained
5. The remainder is subtracted from 11

(d) What is meant by the weighting of a digit?

_____

_____ [1]

(e) Step **2** is missing. Identify this step.

_____

_____

_____

_____ [2]

[Turn over

11366

(f) Describe the special cases that can occur at step **5**.

_____

_____

_____

_____

_____

_____ [3]

(g) Discuss the effectiveness of a check digit in detecting data entry errors.

_____

_____

_____

_____

_____

_____

_____

_____

_____ [5]

11366

20SDT2108

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(Questions continue overleaf)

11366

20SDT2109

3 **(a)** Describe each of the following components of a computer system.

Main memory

_____

_____

_____

_____

Address bus

_____

_____

_____

_____

Port

_____

_____

_____

_____ **[6]**

11366

20SDT2110

(b) Explain how cache memory is used by the processor.

_____

_____

_____

_____

_____

_____ [3]

Optical and flash are types of secondary storage media.

(c) Explain why secondary storage is needed.

_____

_____

_____

_____

_____

_____ [3]

(d) Describe how data is written to a DVD.

_____

_____

_____

_____

_____

_____ [3]

[Turn over

11366

(e) Evaluate the suitability of using a USB memory stick for backing up data.

_____

_____

_____

_____

_____

_____

_____

_____

_____ [5]

11366

4 System software includes an operating system and utility programs.

(a) Describe the purpose of an operating system.

_____

_____

_____

_____

_____

_____ [3]

(b) Describe each of the following types of operating system.

Multiprocessing

_____

_____

_____

_____

_____

Multi-tasking

_____

_____

_____

_____

_____

_____ [6]

[Turn over

11366

20SDT2113

(c) Explain how archive software is used by a typical business.

_____

_____

_____

_____ [2]

An organisation uses generic software for a range of business applications.

(d) Using suitable examples, explain the difference between generic software and special purpose software.

_____

_____

_____

_____

_____

_____

_____

_____ [4]

11366

(e) The organisation currently uses proprietary software but has decided to replace this with open source software.

Evaluate the organisation's decision.

_____

_____

_____

_____

_____

_____

_____

_____

_____ [5]

11366

20SDT2115

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

URL

_____

_____

_____

_____

http

_____

_____

_____

Web server

_____

_____

_____

_____ [6]

11366

20SDT2116

(b) Explain how the International Telecommunications Union (ITU) plays an important part in Web technology.

_____

_____

_____

_____

_____

_____ [3]

(c) Describe the output from each of the following HTML tags.

(i) `<a href="index.html">Home page</a>`

_____

_____

_____

_____

_____ [3]

20SDT2117

(ii) `<img src="logo.gif" alt="Company logo" width="50" height="50">`

_____

_____

_____

_____

_____

_____ [3]

(d) Evaluate the use of cascading style sheets (CSS) in the design of a website.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____ [5]

11366

THIS IS THE END OF THE QUESTION PAPER

20SDT2119

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20SDT2120