



Rewarding Learning

General Certificate of Secondary Education
2010

Centre Number

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Candidate Number

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Information and Communication Technology

Full Course

Paper 2
Higher Tier



G5804

[G5804]

THURSDAY 24 JUNE, MORNING

TIME

1 hour.

INSTRUCTIONS TO CANDIDATES

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

Write your answers in the spaces provided in this question paper.

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

Answer **all twelve** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 100, including a maximum of 5 marks for quality of written communication.

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

| For Examiner's use only | |
|-------------------------|-------|
| Question Number | Marks |
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
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| | |
|--------------------|--|
| Total Marks | |
|--------------------|--|

6273

Examiner Number

| |
|--|
| |
|--|

- 1 Leisa wants to buy a digital photo frame but needs help with some of the technical description.

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|---------------|--------|
| Marks | Remark |



© PC World/DSGI PLC

- 320 × 234 Resolution
- Stand for landscape or portrait mode
- Single image or slideshow mode
- 128 MB ROM
- SD memory card expansion slot
- Wireless connectivity

- (a) Explain the term **resolution** and say why it is important when displaying graphic images.

[2]

- (b) Draw two diagrams in the space below to show what is meant by landscape and portrait modes.

[1]

- (c) The picture frame has ROM memory and accepts an SD memory card. State which is volatile and which is non-volatile.

| Storage Device | Volatile/Non-volatile? |
|----------------|------------------------|
| ROM Chip | |
| SD Memory Card | |

[2]

- (d) Give **ONE** reason why the picture frame shown above would need expansion slots for memory cards when it already has its own memory chip.

_____ [1]

- (e) Give **TWO** advantages of the picture frame having wireless connectivity.

1. _____

2. _____

_____ [2]

Examiner Only

Marks Remark

Total Question 1

[Turn over]

2 Verification and validation help reduce errors when data is being entered into a computer system.

(a) Complete the table below by stating which definition is data validation and which is data verification.

| Definition | Validation/Verification? |
|---|--------------------------|
| Helps guarantee the accuracy of data being entered into a computer system | |
| Helps ensure that data being entered into the system is correct | |

[2]

(b) Complete the table below stating what type of validation check is being carried out on the Data Items shown. (The first is completed for you.)

| Data Item | Error Message | Validation check |
|---------------------|--|------------------|
| 2001 | Membership number must be between 1 and 2000 | Range check |
| @lexander | Member name must contain text only | |
| 18/05/2000 | Date of birth must be entered dd/mm/yy | |
| PT | Membership type must be 3 characters long | |
| Field is left blank | Membership number cannot be left blank | |

[4]

Examiner Only

Marks Remark

- 3 Ticketmaster have stores all over the UK and Ireland in addition to their online store. To prevent double booking of tickets all of their stores are connected via a WAN (Wide Area Network).

ADSL and **ISDN** can be used to provide WAN communication links.

- (a) Expand the acronym **ISDN**.

_____ [1]

- (b) Give **ONE** advantage of using an ADSL over a traditional telephone line.

 _____ [1]

- (c) Give **ONE** disadvantage of using fibre optic cable for connecting stores via a WAN.

 _____ [1]

Communication protocols are needed on networks.

- (d) What is a communications protocol?

 _____ [2]

| Examiner Only | |
|---------------|--------|
| Marks | Remark |
| | |

- 4 Neil has started a new taxi firm and wants to create a database to keep records of his staff and bookings. He sets up the following tables in a relational database.

tblDriver

| Driver ID | Driver Name | Tel Num | Car Reg | Car capacity |
|-----------|--------------|-------------|----------|--------------|
| 100 | N McFall | 07766872363 | UHY 8798 | 5 |
| 101 | J McMasters | 07712398762 | JTG 9801 | 8 |
| 102 | A McAllister | 07712366177 | CLZ 2290 | 5 |
| 103 | R Jones | 07799982771 | OIL 2065 | 15 |

tblBooking

| Booking ID | Driver ID | Booking Name | Date | Time | Pick-up | Set-down | Num Passengers |
|------------|-----------|--------------|----------|-------|-----------------|--------------|----------------|
| 200 | 102 | Cowden | 01/05/10 | 12:00 | Castlecourt | Green Road | 1 |
| 201 | 102 | Brown | 01/05/10 | 12:15 | City Hall | Lisburn Road | 3 |
| 201 | 101 | Gribben | 01/05/10 | 12:15 | Victoria Sq | Ormeau Road | 2 |
| 203 | 102 | Ward | 02/05/10 | 12:20 | 12 Belmont Road | City Centre | 2 |
| 205 | 100 | Forrester | 02/05/10 | 13:00 | Forestside | Belmont Road | 1 |
| 206 | 102 | Oswald | 02/05/10 | 13:20 | Belmont Road | City Centre | 1 |

- (a) Identify **ONE** error Neil has made entering data into the **Booking ID** field in tblBooking.

_____ [1]

Driver ID is the key field in tblDriver.

| Examiner Only | |
|---------------|--------|
| Marks | Remark |
| | |

(b) Why can **Driver ID** not be used as the **key field** in tblBooking?

_____ [1]

(c) Give **ONE** reason why Neil would not be able to add the following booking to tblBooking.

| Booking ID | Driver ID | Booking Name | Date | Time | Pick-up | Set-down | Num Passengers |
|------------|-----------|--------------|----------|-------|-------------|--------------|----------------|
| 207 | 105 | Grant | 02/05/10 | 13:00 | Castlecourt | Boucher Road | 3 |

_____ [1]

Use the data in the tables shown to answer the following questions.

(d) How many records will each of the following queries return for Neil?

(i)

| | | | | | |
|-----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Field: | Booking ID | Driver ID | Booking Name | Date | Time |
| Table: | tbl Booking | tbl Booking | tbl Booking | tbl Booking | tbl Booking |
| Sort: | | | | | |
| Show: | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Criteria: | | "102" | | "02/05/10" | |
| or: | | | | | |

_____ [1]

| | |
|--|--|
| | |
|--|--|

(ii)

| Field: | Booking ID | Driver ID | Booking Name | Date | Time |
|-----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Table: | tbl Booking | tbl Booking | tbl Booking | tbl Booking | tbl Booking |
| Sort: | | | | | |
| Show: | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Criteria: | | "101" | | "02/05/10" | |
| or: | | "103" | | | |

[1]

(iii)

| Field: | Driver Name | Booking Name | Date | Time |
|-----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Table: | tbl Driver | tbl Booking Query | tbl Booking Query | tbl Booking Query |
| Sort: | | | | |
| Show: | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Criteria: | "A McAllister" | | "01/05/10" | |
| or: | | | | |

[1]

(e) Name **ONE** feature of a database application Neil might use to display the results of each query.

[1]

He uses the following form to add details of new drivers to the database.

| | |
|--------------|----------------------|
| Driver ID | <input type="text"/> |
| Driver Name | <input type="text"/> |
| Tel Num | <input type="text"/> |
| Car Reg | <input type="text"/> |
| Car Capacity | <input type="text"/> |

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|---------------|--------|
| Marks | Remark |
| | |

(f) Give **TWO** ways he could improve the appearance of the form.

1. _____ [1]

2. _____ [1]

Relational databases are designed to help reduce **data redundancy** and improve **data integrity**.

(g) (i) Place a tick (✓) beside the correct definition of **data integrity** in the table below.

| Definition | Tick (✓) |
|--|----------|
| Data integrity refers to how correct and relevant the data is | |
| Data integrity refers to how correct and reliable the data is | |
| Data integrity refers to how accurate and normal the data is | |
| Data integrity refers to how accurate and irrelevant the data is | |

[1]

(ii) Explain what is meant by **data redundancy**.

_____ [1]

(iii) Give **ONE** effect of data redundancy on the database.

_____ [1]

| Examiner Only | |
|------------------|--------|
| Marks | Remark |
| | |
| Total Question 4 | |
| | |

[Turn over

5 Patrick manages a call centre. The computers in the call centre are linked via a LAN (Local Area Network).

(a) Other than communication give **TWO** advantages of using a LAN in an office.

1. _____
 _____ [1]

2. _____
 _____ [1]

(b) The network is backed up daily. Tick (✓) **TWO** storage media in the table below that are suitable for backing up a computer network.

| Storage media | Tick (✓) |
|---------------------|----------|
| Memory Stick | |
| DVD ROM | |
| Magnetic Tape | |
| External Hard Drive | |
| CD ROM | |

[2]

(c) Other than usernames and passwords and back up. Give **ONE** other method of providing security on a network.

 _____ [1]

(d) Give **TWO** differences between a LAN and a WAN.

1. _____

 2. _____
 _____ [2]

Examiner Only

Marks Remark

Total Question 5

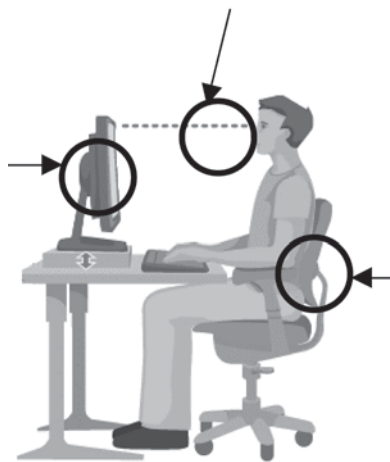
6 Health and safety is important when working on a computer.

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|---------------|--------|
| Marks | Remark |
| | |

(a) Finish labelling the diagram below to give advice to someone who will be working for long periods of time on a computer. Two labels have been completed for you.

(i) Advice: _____
 _____ [1]
 Reason: _____
 _____ [1]

(ii) Advice: _____
 _____ [1]
 Reason: _____
 _____ [1]



Advice: Chairs should have
lower back support
 Reason: Helps to reduce
back strain

(<http://www.codinghorror.com/blog/images/computing-ergonomics-monitor-position.png>)

Electrical sockets in the workplace should not be overloaded to reduce the chance of fire occurring.

(b) Give **TWO** other precautions that should be taken in the workplace to help reduce the likelihood of accidents occurring.

1. _____
 _____ [1]
2. _____
 _____ [1]

| | |
|------------------|--|
| | |
| Total Question 6 | |
| | |

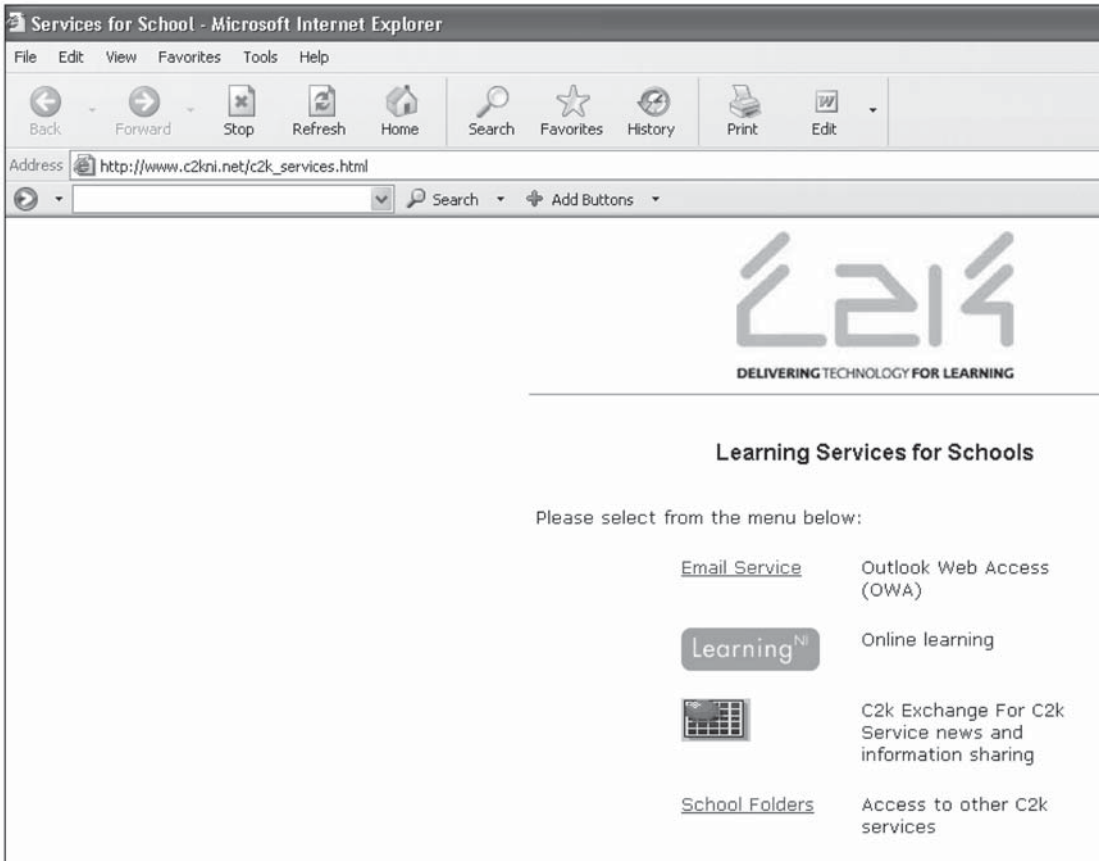
[Turn over

7 Web browser software allows users to display **HTML** web pages they have retrieved from the Internet.

(a) Expand the acronym **HTML**.

_____ [1]

(b) On the web page displayed below circle the **navigation bar**. [1]



©c2kni

(c) Give **ONE** advantage of being able to display the browsing history when using a web browser.

 _____ [1]

| Examiner Only | |
|---------------|--------|
| Marks | Remark |
| | |

(d) Explain the function of the button labelled **Home** on a web browser.

[1]

Web pages can be accessed by typing their **URL** into the address bar.

(e) Expand the acronym **URL**.

[1]

| Examiner Only | |
|------------------|--------|
| Marks | Remark |
| | |
| Total Question 7 | |
| | |

8 Electricity, gas and telephone bills are all produced using batch processing.

(a) Name **ONE** other application that uses batch processing.

_____ [1]

(b) Use the words below to complete the following sentences to describe the steps involved in creating electricity bills using batch processing. (note: not all words will be used)

Master File

Error Report

Transaction File

Batch

Bill

Turnaround Document

Details of current meter readings are entered onto the system in one

_____ .

Problem data results in an _____ .

Current meter readings are then stored on a _____

which is then merged with the old _____ so the

customer's _____ can be calculated. [5]

(c) In most batch processing systems the data is processed overnight. Give **ONE** advantage to the organisation of processing data at this time.

 _____ [1]

(d) Give **ONE** reason why batch processing is not a suitable method for processing flights on an Internet-based booking system.

 _____ [1]

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Marks Remark

Total Question 8

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(Questions continue overleaf)

9 Computer control systems are widely used in the home and in society today.

- (a) (i) Give **TWO** examples where computer control is used in traffic control systems. For each example list the sensor used to record data for the system.

Example 1 _____ [1]

Sensor 1 _____ [1]

Example 2 _____ [1]

Sensor 2 _____ [1]

- (ii) Give **ONE** advantage and **ONE** disadvantage of this application of computer control in society today.

Advantage:

 _____ [1]

Disadvantage:

 _____ [1]

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|---------------|--------|
| Marks | Remark |
| | |

(b) Feedback is an essential part of all control systems.

Complete Step 5 in the following sequence for a feedback system to help illustrate how feedback is used to keep the temperature in a greenhouse between 20 °C and 30 °C.

- Step 1:** The temperature is recorded using a thermometer.
- Step 2:** The temperature reading is compared to see if it is below 20 °C or above 30 °C.
- Step 3:** If the temperature is below 20 °C the heating system is switched on.
- Step 4:** If the temperature is above 30 °C the windows are opened.

Step 5: _____
 _____ [1]

(c) Give **ONE** example of a computer control system used in the home.
 _____ [1]

| Examiner Only | |
|------------------|--------|
| Marks | Remark |
| | |
| Total Question 9 | |
| | |

[Turn over

10 Digital technology has altered the way we record, distribute and listen to music.

| Examiner Only | |
|---------------|--------|
| Marks | Remark |
| | |

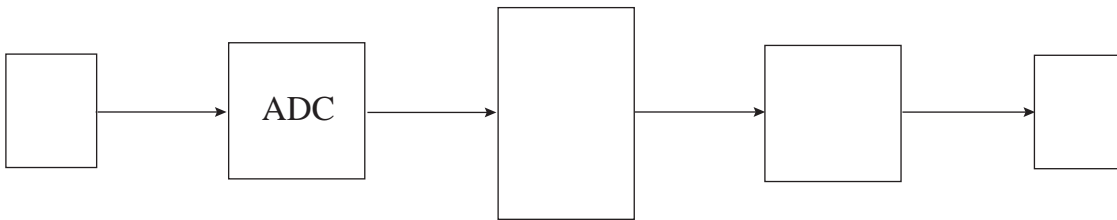
(a) Digital recordings take sound waves in analogue format and converts them to digital using an ADC (Analogue to Digital Converter).

Give **ONE** reason why this conversion is necessary.

_____ [1]

(b) Label the diagram below using the following terms

Computer Speaker Microphone DAC



(i) _____ (ii) _____ (iii) _____ (iv) _____

[4]

| | |
|--|--|
| | |
|--|--|

(c) Tick (✓) **TWO** advantages of digital music recordings **for the listener**.

| Advantage | Tick (✓) |
|--|----------|
| The file quality will remain the same at all times | |
| The file can be played on any audio device | |
| The file can be stored on a computer and played back | |
| The file quality deteriorates over time | |

[2]

(d) Other than improved sound quality, list **TWO** advantages of using **MIDI** technology to **create** music files.

1. _____

_____ [1]

2. _____

_____ [1]

Examiner Only

Marks Remark

Total Question 10

[Turn over

11 Games consoles such as Xbox 360, Playstation 3, Nintendo Wii, Nintendo DS are widely available to teenagers today.

(a) Tick (✓) **THREE** statements that are **TRUE** about gaming technology today.

| Statement | Tick (✓) |
|--|----------|
| Some games consoles can be connected to the Internet for interactive gaming | |
| Virtual reality games are available for play via mobile phone technology | |
| All computer games are available for purchase in CD format | |
| Virtual reality games can now be found in some gaming arcades | |
| Games consoles now come with a variety of peripherals to allow interaction with the game | |

[3]

(b) State **TWO** advances in technology that have helped improve the quality of computer gaming today.

1. _____
 _____ [1]

2. _____
 _____ [1]

(c) Computer gaming has also had a negative impact on society.

Give **TWO** health problems that have developed as a result of long term gaming.

1. _____
 _____ [1]

2. _____
 _____ [1]

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Marks Remark

Total Question 11

12 Mobile phones have a variety of uses including making voice calls and messaging. They can also be used as entertainment devices.

- (a) Identify **TWO** ways a mobile phone can be used as an entertainment device and give **TWO** pieces of advice to someone who wants to use a mobile phone in this way.

- (b) Identify **TWO** ways in which the increased use of mobile phones has impacted on society.

[6]

THIS IS THE END OF THE QUESTION PAPER

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Marks Remark

Total Question 12

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