Rewarding Learning

**General Certificate of Secondary Education
2013**

Information and Communication Technology (Full Course)

Unit 3: Understanding ICT Systems in Everyday Use and its Implications for Individuals, Organisations, Society and the Wider World
[GIT31]

GIT31

THURSDAY 6 JUNE, MORNING

TIME

2 hours.

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 box, around each page or on blank pages.
Complete in blue or black ink only. **Do not write in pencil or with a gel pen.**
Answer **all twenty-one** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 180.
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
3(c)(ii), **5(a)**, **7(a)**, **9(c)**, **13(b)**, **14(b)** and **20(a)**.

For question 1 parts (a)–(l) insert the appropriate letter in the space provided.

1 **(a)** A WAN is:

  A   A World Area Network

  B   A Wide Applications Network

  C   A Wide Area Network

  D   A World Applications Network

<div align="right">Answer _____ [1]</div>

  (b) RSI is:

  A   Repetitive Strain Injury

  B   Repetitive Serious Injury

  C   Realtime Strain Injury

  D   Realtime Serious Injury

<div align="right">Answer _____ [1]</div>

  (c) The law designed to protect against software copying is:

  A   The Copyright, Designs and Software Act

  B   The Copyright, Designs and Patents Act

  C   The Copyright, Data and Patents Act

  D   The Computer, Data and Software Act

<div align="right">Answer _____ [1]</div>

  (d) ADSL is:

  A   Asymmetric Data Subscriber Line

  B   Asymmetric Digital Sensor Line

  C   Asymmetric Digital Subscriber Line

  D   Asymmetric Data Sensor Line

<div align="right">Answer _____ [1]</div>

(e) Four main features of a GUI are:

A Windows, Icons, Applications, Menus

B Icons, Menus, Pointers, Windows

C Software, Icons, Applications, Menus

D Menus, Icons, Pointers, Software

Answer _____ [1]

(f) Which statement is true about ROM?

A ROM can be written to but not read from.

B ROM holds the programs currently being used by the computer system.

C ROM can be read from but not written to.

D Programs stored in ROM can be updated.

Answer _____ [1]

(g) Which statement is true about RAM?

A RAM is non-volatile and the amount of RAM in a computer cannot affect its performance.

B RAM is non-volatile and the amount of RAM in a computer can affect its performance.

C RAM is volatile and the amount of RAM in a computer cannot affect its performance.

D RAM is volatile and the amount of RAM in a computer can affect its performance.

Answer _____ [1]

(h) A template is:

A a program which helps the user to complete a task

B a standard layout for a document which can be reused

C a program which protects the computer against viruses

D a document which has been merged with a database

Answer _____ [1]

[Turn over

8105

(i) Select the statement which is true about a LAN.

A A LAN is a Logical Area Network, allows peripherals to be shared and has a file server for storing software.

B A LAN is a Local Area Network, allows data to be shared across the Internet and has a file server for storing software.

C A LAN is a Local Area Network, allows peripherals to be shared and allows users to share data.

D A LAN is a Logical Area Network, allows data to be shared and has a file server for storing software.

Answer _____ [1]

(j) Select the statement which is true about a fax machine.

A It must be switched on to receive faxes and can transmit hand written documents.

B It does not need to be switched on to receive faxes and can transmit hand written documents.

C It must be switched on to receive faxes and cannot transmit handwritten documents.

D It cannot transmit handwritten documents and information received can be edited electronically.

Answer _____ [1]

(k) Select the statement which is true about EFTPOS.

A It provides itemised receipts but does not allow payments to be processed.

B It allows barcodes to be scanned but does not allow payments to be processed.

C It provides itemised receipts but does not allow barcodes to be scanned.

D It provides itemised receipts and allows payments to be processed.

Answer _____ [1]

(l) ATM stands for:

A Automatic Teller Money

B Automatic Teller Machine

C Application Teller Machine

D Application Teller Money

Answer _____ [1]

(m) The diagram below shows an ATM. State whether the parts labelled are input or output devices.

© iStock/Thinkstock

A	
	[1]
B	
	[1]

Total Question 1

[Turn over

40GIT3105

2 Joanne has created a spreadsheet to calculate the bonus due to each of her employees. Below is a section of the spreadsheet.

	A	B	C	D	E	F	G	H	I
1				Holiday Bonus Calculator - Joanne's Jewellery					
2	Forename	Surname	Hours Worked	Rate of Pay Per Hour	Total before Bonus	Bonus	Bonus Amount	Total Earned	Taxable
3	Anne	Dellby	20	£ 10.00	£ 200.00	10%	£ 20.00	£ 220.00	**Yes**
4	Jack	Beale	8	£ 6.00	£ 48.00	5%	£ 2.40	£ 50.40	No
5	Alex	Bowen	30	£ 10.00	£ 300.00	10%	£ 30.00	£ 330.00	Yes
6	Ewan	Rawdon	15	£ 8.00	£ 120.00	10%	£ 12.00	£ 132.00	Yes
7	John	Mahon	17	£ 9.00	£ 153.00	10%	£ 15.30	£ 168.30	Yes
8	Marc	Smyth	10	£ 7.00	£ 70.00	5%	£ 3.50	£ 73.50	No
9			100		£ 891.00		£ 83.20	**£ 974.20**	
10									
11									
12	Higher Bonus Rate	10%							
13	Lower Bonus Rate	5%							
14									
15	Tax Boundary	£100.00							

(a) Write down the formula you would expect to find in cell **H9**.

_____ [1]

(b) If an employee's Total Earned is more than £100.00, they must pay tax. Tick (✓) **one** formula which you would expect to find in cell **I3**.

Formula	Tick (✓)
=IF(H3>100,"Yes", "No")	
=IF(H3<100,"Yes", "No")	
=IF(H3=100, "No", "Yes")	

[1]

(c) Absolute cell references have been used in the following formula:

=IF(C3>10,B12,B13)

What is the advantage of using an absolute cell reference in any formula?

_____

_____ [2]

40GIT3106

(d) Below is a printout created by Joanne.

Higher Bonus Rate	10%
Lower Bonus Rate	5%

Tax Boundary	£ 100.00

Complete the **Print <u>a</u>rea:** entry below showing the cells selected to provide the printout.

Page Setup   [?] [X]

| Page | Margins | Header/Footer | Sheet |

Print <u>a</u>rea:

[2]

(e) Below is a chart produced from the spreadsheet data shown.
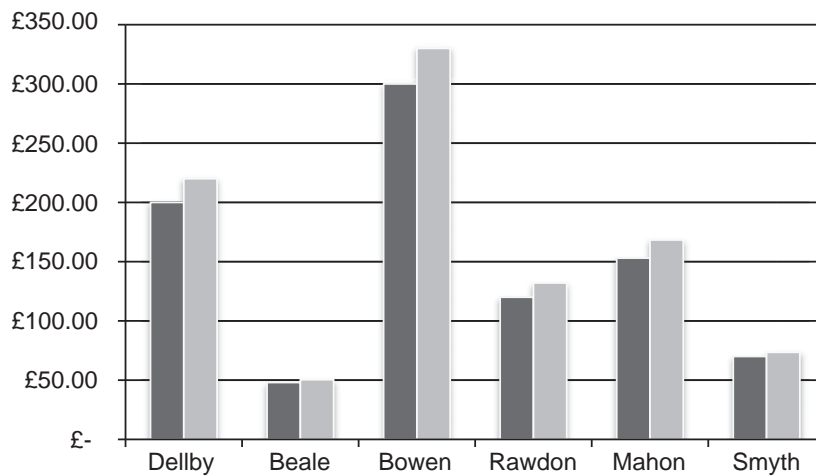
Write down the **three** cell ranges used to produce this chart.
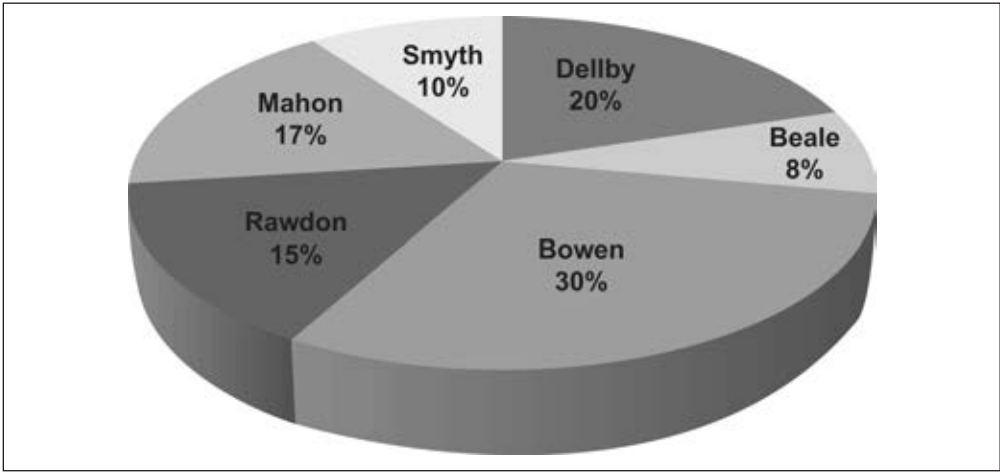
1. _____

2. _____

3. _____ [3]

(f) Joanne creates another chart, shown below. Describe the information presented on the chart.

_____

_____

_____ [2]

3 JK Artform create digital and painted images of Northern Ireland landscapes. The company has its biggest client in the United States.

(a) Clients in the United States wish to meet the artists, so JK Artform have proposed using video conferencing for this purpose.

(i) What is video conferencing?

_____

_____

_____ [1]

(ii) What advice would you give to the company about the bandwidth required for video conferencing?

_____

_____

_____ [2]

The company director is concerned about the impact of ICT on the environment.

(b) Describe **one** way in which video conferencing can help reduce this.

_____

_____

_____ [2]

[Turn over

(c) The director of JK Artform has decided to employ a number of teleworkers.

(i) The statements below are about teleworking. Write **TRUE** or **FALSE** beside each. The first one has been done for you.

Statement	TRUE/FALSE
Teleworking is the use of the telephone to make sales to customers.	**FALSE**
Teleworking allows employees to work flexible hours.	[1]
Teleworker activity is more difficult for managers to monitor.	[1]
Teleworking allows for a lot of face-to-face contact between workers.	[1]

(ii) Describe how the use of teleworkers will impact on the company in terms of:

- Recruiting employees
- Training employees
- Expenses and costs

Recruiting employees _____

_____

_____

_____

_____

Training employees _____

_____

_____

_____

_____

8105

Expenses and costs _____

_____

_____ *40GIT3111*

_____

_____

_____ [6]

Total Question 3

4 **(a)** SM Estates have bought new computers and wish to network them. Using the terms provided, complete the following paragraph which will explain the function of network components to employees.
(Each selected term should be used only once.)

Network Interface Card   **Router**   **Cable**

Switch   **LAN**   **WAN**

A network which is used within a building is called a

_____ . Each computer on the network should

have a _____ installed to allow the

computer to send messages on the network. A _____

is a single connection point for a group of computers and is connected

to the file server. The _____ will share the

Internet connection between computers on the network. [4]

(b) The company manager has asked about the protocol on the network. What is a network protocol?

_____

_____ [1]

Total Question 4

8105

DO NOT WRITE ON THIS PAGE

(Questions continue overleaf)

5 **(a)** The Data Protection Act is designed to protect an individual's personal data. Describe **two** different principles of the Data Protection Act **and** explain what a company should do to follow each of the principles you have chosen.

Principle 1: _____

_____

_____

Explanation 1: _____

_____

_____

_____

_____

Principle 2: _____

_____

_____

Explanation 2: _____

_____

_____

_____

_____

_____ [6]

40GIT3114

(b) Tick (✓) **two** statements that are true about the role of individuals in the Data Protection Act.

Statement	Tick (✓)
The Data Subject is the person who is responsible for the security of data.	
The Data Subject is the person about whom the data is held.	
The Information Commissioner is the person responsible for recording data in an organisation.	
The Information Commissioner is the person responsible for making sure companies follow the Data Protection Act.	

[2]

Total Question 5

[Turn over

8105

40GIT3115

6 GoMusic is a small business which provides professional music tutoring. People register using an online form. The following rules apply:

- People must enter their surname onto the form.
- People must be aged 10–18.
- People can set up a member's account. If they do, they must select a password of at least eight characters.
- People may enter a budget for tutoring but it must be in pounds, e.g. £15.00.

Tick (✓) **one** validation check for each item of data and give a reason for each choice in the space provided.

Data	Validation Check	Reason for choice
(a) Surname	☐ Presence check ☐ Range check ☐ Length check ☐ Type check [1]	[1]
(b) Budget	☐ Presence check ☐ Range check ☐ Length check ☐ Type check [1]	[1]
(c) Age	☐ Presence check ☐ Range check ☐ Length check ☐ Type check [1]	[1]
(d) Password	☐ Presence check ☐ Range check ☐ Length check ☐ Type check [1]	[1]

8105

40GIT3116

7 (a) Computer gaming has become an extremely popular entertainment activity. Outline the current trends in computer gaming under the following headings:

- Online gaming
- Games consoles

Online gaming: _____

_____

_____

_____

_____

_____

Games consoles: _____

_____

_____

_____

_____

_____

_____ [6]

(b) John is developing a game for his GCSE coursework.

(i) He must produce a storyboard. What is the purpose of a storyboard when developing a game?

_____

_____ [2]

(ii) List **two** game elements which John could use in his game.

1. _____

2. _____ [2]

Total Question 7

[Turn over

8105

40GIT3117

8 OMR is a form of entering data into a computer.

(a) Expand the acronym OMR.

_____ [1]

(b) List **two** advantages of using OMR for entering data.

1. _____

2. _____ [2]

(c) Supermarket checkout operators scan barcodes on products to produce customer bills.

(i) List **two** items of data held on the barcode.

1. _____

2. _____ [2]

(ii) State **one** reason why the barcode may not scan properly.

_____

_____ [1]

Total Question 8

8105

9 Increased usage of the Internet has changed the way people live. Most people do some shopping online.

(a) Circle **two** advantages that online shopping has brought to the customer.

No premises required | 24/7 shopping | Fewer staff required | Larger range of shops | Goods are received immediately

[2]

In order to shop online customers can use their Credit or Debit Card.

(b) List **two** pieces of data they will have to enter from their card when purchasing goods online.

1. _____

2. _____ [2]

(c) Explain how the following help ensure that customer details are processed securely when shopping online.

● SET
● Encryption

SET _____

_____

_____

_____

Encryption _____

_____

_____

_____ [6]

Total Question 9

[Turn over

10 Lucy is creating a database for her school project.

(a) Below is a section from the **Customer** table.

Name	House number	Street	Town/City	Postcode
Mr Joe Watson	1	High Street	Belfast	BT4 6TD
Mr Jim Donald	31	Mary Street	Newry	BT24 6TL
Miss Amy White	52	West Street	Armagh	BT62 8TY
Ms Caitlin Rooney	2a	Church Walk	Lisburn	BT18 5FG

(i) Shade **one** record in the table above. [1]

(ii) List **one** field name used in the table above.

_____ [1]

(b) Explain how Lucy could change the Name field in this table to assist her when searching for customers.

_____

_____ [2]

(c) List **two** features of a database package which could help Lucy to produce printed information.

1. _____

2. _____ [2]

Lucy needs to include a primary key in the **Video** table below.

Title	Genre	Rating	Number in stock
High School Musical	Musical	U	4
The Secret of the Unicorn	Comedy	PG	5
The Lion King	Musical	U	3
Footloose	Musical	12A	6

(d) What is a primary key?

_____

_____ [1]

(e) The table below is a sample of data taken from the **Rental** table.

Rental No	Video ID	Member ID	Date Borrowed	Days Rented	Price per night
01	COM01	WAL01	20/05/2013	3	£3.50
02	CLA06	SMI01	20/05/2013	2	£3.00
02	MUS09	SMI01	20/05/2013	2	£4.00
03	THR11	BES02	24/05/2013	2	£3.50
04	DRA05	CLA05	26/05/2013	3	£3.00

(i) Suggest data types for the following fields in the **Rental** table.

Field Name	Data Type
Rental No	
Member ID	
Price per night	

[3]

(ii) Lucy is going to set up relationships in the database. What is the function of a relationship in a database structure?

_____

_____ [1]

[Turn over

8105

11 (a) James is a GCSE student and needs some help in selecting appropriate storage media for his coursework. He has asked about the following storage devices.

Storage Device	Capacity
USB Memory Stick	2 Gigabyte
External Hard Drive	1 Terabyte
CD-R	650 Megabyte

(i) Complete the table below by inserting the name of the storage devices in order of their capacity, largest first.

Rank	Storage Device
1.	(largest capacity)
2.	
3.	(smallest capacity)

[3]

(ii) State whether each storage device is optical, magnetic or flash media.

Storage Device	Capacity	Type of media (optical, magnetic or flash)
USB Memory Stick	2 Gigabyte	
External Hard Drive	1 Terabyte	
CD-R	650 Megabyte	

[3]

(b) James has decided to use either a DVD-RW or DVD-R. Tick (✓) **two** statements that are true about these storage devices.

Statement	Tick (✓)
Both DVD-R and DVD-RW are read only.	
DVD-R can be written to only once.	
DVD-RW can be written to many times.	
Both DVD-R and DVD-RW can be written to only once.	

[2]

Total Question 11

[Turn over

8105

40GIT3123

12 Joanne is looking for hotels in Benidorm on Spain's Costa Blanca.

(a) Tick (✓) **one** search criteria which is best for helping Joanne locate hotels in Benidorm.

Search Criteria	Tick (✓)
"Spanish holidays"	
Spanish Holidays + Hotels	
Costa Blanca + Benidorm	
Costa Blanca + Benidorm + Hotels	
Costa Blanca + Benidorm + Apartments not Hotels	

[1]

(b) Joanne's search returns 500 relevant results. She needs to reduce this. How can she do it?

_____

_____ [1]

Web addresses contain domain names.

(c) Place the following top level domains in the correct box. The first one has been completed for you.

.com	.ac	.org

Domain	Top level Domains
GOVERNMENT	.gov
ORGANISATIONS	
COMMERCIAL ORGANISATIONS	
SCHOOL or COLLEGE	

[3]

Total Question 12

13 (a) Using the terms provided, write the correct term beside its definition. **Not all terms will be used.**

HOT SPOTS   HYPERLINKS   HTML   HTTP

Term	Definition
	Included on web pages to allow users to navigate from one web page to another.
	An area on a graphic which can be used to navigate from one page to another.
	The language used to create web pages.

[3]

(b) How can the following contribute to good website design?

- Image compression
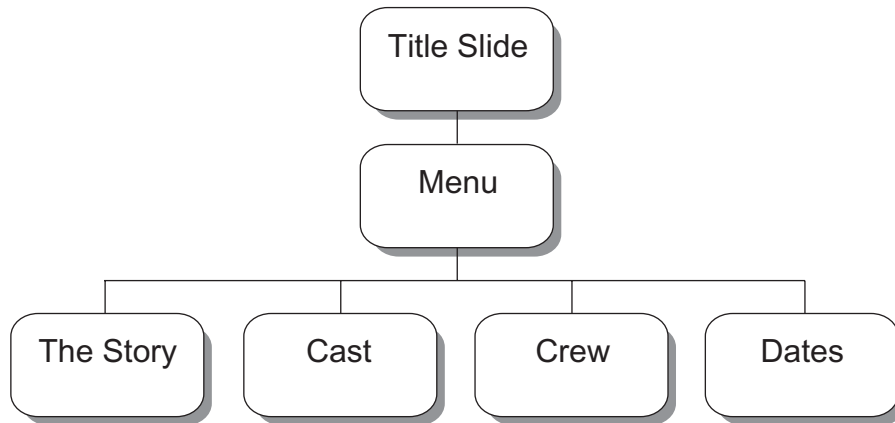- Navigation
- Multimedia

Image compression _____

_____

_____

_____

Navigation _____

_____

_____

_____

Multimedia _____

_____

_____

[6]

[Turn over

8105

14 Liz wants her friend to make a multimedia presentation to advertise her high school musical "South Pacific" to parents at the Open Evening.

She wants parents to be able to select their own pathway through the presentation, so Liz creates this navigation plan to show how slides should be linked.

```
                    ┌─────────────┐
                    │ Title Slide │
                    └─────────────┘
                           │
                    ┌─────────────┐
                    │    Menu     │
                    └─────────────┘
           ┌───────────┼───────────┬───────────┐
    ┌───────────┐ ┌───────────┐ ┌───────────┐ ┌───────────┐
    │ The Story │ │   Cast    │ │   Crew    │ │   Dates   │
    └───────────┘ └───────────┘ └───────────┘ └───────────┘
```

(a) In the table below, place a **tick** (✓) beside **two** presentation tools that would allow users to select different pathways through Liz's presentation.

Tool	Tick (✓)
Timings	
Buttons	
Hyperlinks	
Master slide	
Templates	

[2]

8105
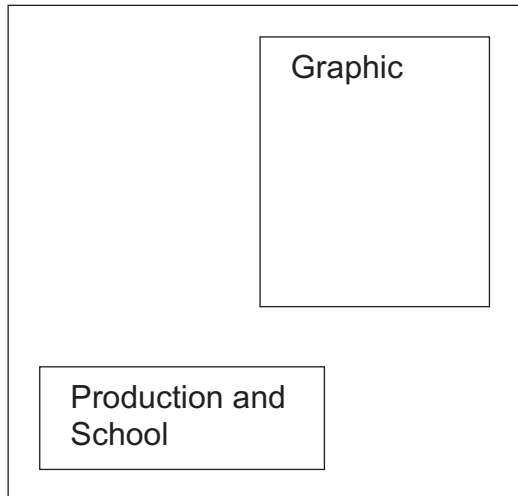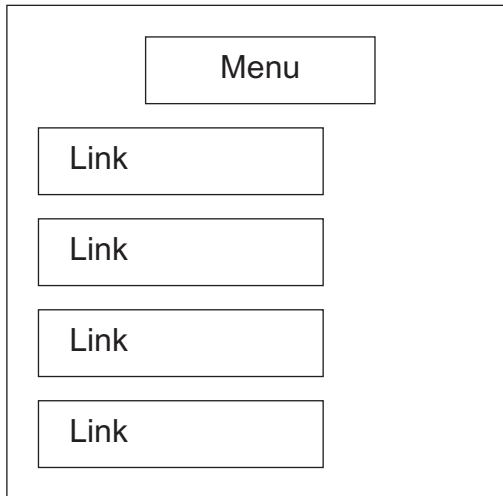
Liz draws up the following storyboard for the first two slides of her presentation. She says she wants the presentation to contain animation and sound.

Title Slide

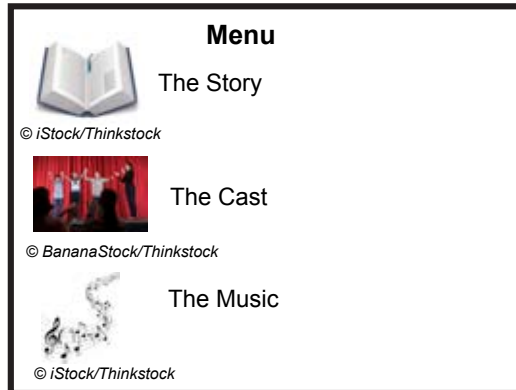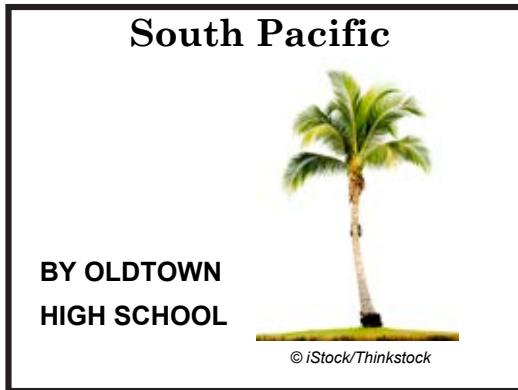| |
|---|
| Graphic |
| Production and School |

Menu Slide

Menu
Link
Link
Link
Link

Her friend creates the following slides for the start of Liz's multimedia presentation.

South Pacific

© iStock/Thinkstock

BY OLDTOWN
HIGH SCHOOL

Menu

The Story
© iStock/Thinkstock

The Cast
© BananaStock/Thinkstock

The Music
© iStock/Thinkstock

[Turn over

Liz needs some advice on testing the completed presentation.

(b) Identify **three** elements of the completed presentation Liz could test and say how she would carry out each test.

Test 1 _____

_____

_____

_____

_____

Test 2 _____

_____

_____

_____

_____

Test 3 _____

_____

_____

_____

_____ [6]

Total Question 14

8105

15 Input, Processing and Output activities are used to control water heating systems in the home.

(a) Complete the table below to show which activity represents Input, Processing and Output in a water heating system. **(Each term can only be used once.)**

Activity	Input/Processing/Output
Temperature is compared to a range of values	
Heating system turns ON/OFF	
Temperature is read using sensors	

[3]

(b) Examine the words below. Place a **circle** around the **two** types of sensors that are used in traffic control systems.

Humidity   **Motion**   **Temperature**

Sound   **Pressure**

[2]

(c) Control systems use feedback. Place a **tick** (✓) beside **one** example of feedback used in a typical washing machine.

Description	Tick (✓)
Washing machine cycle is selected using a dial on the washing machine	
The water temperature increases until it reaches the temperature level chosen	
The water level is recorded by a moisture sensor inside the drum	

[1]

Total Question 15

[Turn over

16 Brooklyn is making a movie with a soundtrack as part of his GCSE ICT controlled assessment.

The completed movie is 20 seconds long. The soundtrack is 30 seconds long.

Brooklyn needs to modify the soundtrack to make sure it stops at the same time as the movie.

(a) (i) State **one** feature of a movie editing package that would allow him to do this.

_____ [1]

(ii) How can Brooklyn use audio effects to change the way the soundtrack plays across the movie?

_____

_____ [1]

Brooklyn wants to use the movie editing package to alter the way his movie clips are presented to the person viewing it.

(b) Identify **one** feature of a movie editing package that will allow him to do this.

_____

_____ [1]

When the movie is completed he has to choose appropriate export settings. The movie will be distributed using a website.

(c) Why would this method of distribution not be appropriate for a movie that is one hour long?

_____

_____

_____

Total Question 16

_____ [2]

8105

17 Jack's school uses a form to collect data from new students. The data is used to create information that can be used by the school.

(a) Place a **tick** (✓) beside **two** statements that are true about information.

Statement	Tick (✓)
Information is raw facts and figures that have not been given a meaning.	
Information can be produced by processing raw data.	
Information is automatically encrypted when it is produced.	
Information is raw facts and figures that have been given a context.	

[2]

40GIT3131

Part of the form the school uses is shown below:

City High School

Pupil Number: _____

Address: _____

Telephone Number: _____

DOB: ____/____/_____

How do you travel to school? _____

_____

LUNCHES? _____

SCHOOL CANTEEN? _____

PUPIL NAME: _____

(b) Explain how this data capture form can be improved upon by commenting on each of the following features of form design.

Font: _____

_____ [1]

Tick Boxes: _____

_____ [1]

Positioning of text: _____

_____ [1]

Instructions: _____

_____ [1]

8105

40GIT3132

18 Jude is working on a project with a group of students from his English class. The students have to read a newspaper article and comment on the content.

(a) Give **one** reason why instant messaging would not be suitable for this task.

_____

_____ [1]

The students decide to use a bulletin board for the task.

(b) Use the words in the list below to complete the sentences which describe why a bulletin board is appropriate for this task (**not all words will be used**).

Offline	Replies	Online	Interactive

Bulletin boards are not _____ . Not everyone

in the group has to be _____ at the same time to

take part in the discussion. Users can comment on the article and

read the _____ from other group members at

anytime. [3]

As part of the lesson the pupils will also link with another school using VoIP.

(c) Explain to Jude what is meant by VoIP.

_____

_____

_____

_____ [2]

Total Question 18

[Turn over

19 Eimear wants to add an animation to her website but cannot remember which of the files shown below is an animated graphic.

Name	Type
100_0030	GIF Image
100_0022	Bitmap Image
100_0023	Bitmap Image
100_0024	Bitmap Image
100_0025	Bitmap Image
100_0022	JPEG Image
100_0026	JPEG Image
100_0025	JPEG Image
100_0023	JPEG Image
100_0024	JPEG Image

(a) State which file is most likely to represent an animated graphic and give **one** reason for your answer.

_____

_____ [2]

Eimear is adding a new image to her website. She changes the image resolution from 96 pixels per inch to 300 pixels per inch.

(b) (i) How might this affect the loading time of the web page the image is added to?

_____

_____ [1]

(ii) From the list below place a **tick** (✓) beside **one** other graphic file type suitable for use when creating web pages.

File Types	Tick (✓)
JPEG	
TIFF	
MIDI	

[1]

Eimear's website will also contain a video.

(c) From the list below **circle** an appropriate video file format.

CSV   **AVI**   **WAV**

[1]

Eimear's dad is a professional photographer. He sometimes has to edit the images he has taken.

(d) Give **two** reasons why he should save his photographs in bitmap format.

1. _____

_____ [1]

2. _____

_____ [1]

Some applications create vector-based graphics.

(e) Use words from the list below to complete the sentences which describe vector-based graphics (**not all words will be used**).

 resolution   **objects**   **bitmaps**   **pixels**   **resized**

Vector-based graphics are made up of _____. [1]

The image quality does not depend on _____. [1]

Vector-based graphics can be _____
without loss of quality.   [1]

Total Question 19

[Turn over

8105

20 Brian owns a recruitment agency. He wants to use a mobile device to keep in touch with the office while he is waiting for a flight at the airport. He cannot decide if he should use a 3G or a Wi-Fi connection.

(a) Describe **three** disadvantages of both 3G and Wi-Fi and say which technology you would recommend and why.

3G _____

_____

_____

_____

_____

_____

Wi-Fi _____

_____

_____

_____

_____

Recommendation _____

_____

_____ [6]

8105

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(b) Match the following terms with the definitions in the table below to identify the facilities available on most mobile phones (**not all terms will be used**).

SMS   Roaming   MMS

Video calling   Voice Mail   Flight Mode

Definition	Mobile Phone Feature
Allows users to send messages containing images to other users	
Allows users to send and receive calls whilst in another country	
Allows users to make interactive calls containing image and sound	
Allows users to send a message containing text only to other users	

[4]

Total Question 20

[Turn over

21 Using the terms in the list below choose **one** term that best matches the definition in the left-hand column (**not all terms will be used**).

BACKUP   **HARD DRIVE**   **FIREWALL**   **FIBRE OPTIC**

VIRTUAL LEARNING ENVIRONMENT   **CACHE**   **BLUETOOTH**

DATA PORTABILITY   **VIRUS**   **PDF**

TOUCH SCREEN   **GRAPHICS DIGITISER**   **MIDI**

Definition	Term
Software designed to protect a network from hacking via the Internet	
A document format which can be made read only	
A software tool designed to deliver courses online	
A type of cable which sends data using light pulses	
An input device which consists of a flat surface upon which the user draws using an attached stylus	
Small capacity memory which operates at high speed	
The ability to transfer data from one system or software application to another without having to re-enter the data	
A program designed to damage a computer system	
A wireless technology which can be used to connect a headset to a mobile phone	
A copy of data currently held on a computer system	

[10]

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8105

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Question Number	Marks
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Examiner Number

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