



General Certificate of Secondary Education
2022

Centre Number

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Candidate Number

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Digital Technology

Unit 1: (Compulsory Core)
Digital Technology



[GDG11]

GDG11

MONDAY 23 MAY, AFTERNOON

TIME

1 hour.

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 twelve** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 90.

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 **4** and **6**.



For Question 1 insert the appropriate letter in the space provided.

1 (a) Which statement contains only non-volatile devices?

- A** RAM, ROM, Cache, SSD.
- B** RAM, Cache, SSD, Hard Disk Drive.
- C** SSD, Hard Disk Drive, ROM, DVD.
- D** SSD, Hard Disk Drive, Cache, ROM.

Answer _____ [1]

(b) If a file is 6400 bits in size, how many bytes are required to store the file?

- A** 8
- B** 80
- C** 800
- D** 8000

Answer _____ [1]

(c) Select the statement which correctly describes the bit rate of a sound recording.

- A** The number of bits processed over a certain period of time.
- B** The number of times per second that a sound signal is captured.
- C** The number of bits of information in each sample.
- D** The number of times a sound is edited and recorded.

Answer _____ [1]



(d) Select the statement which is correct about real-time processing.

- A** Real-time processing involves collecting data together and processing it at a later time.
- B** Real-time processing is used for online booking systems and involves processing data as soon as it is entered into the system.
- C** Real-time processing is used for online booking systems and involves collecting data and processing it at a later time.
- D** Real-time processing is used to produce consumer bills like electricity bills and involves processing data as soon as it is entered into the system.

Answer _____ [1]

(e) Select the statement which is correct about data compression when using image files.

- A** Compression will increase the file size and add additional detail to improve the image.
- B** Compression will increase the file size and remove detail not visible to the human eye from the image.
- C** Compression will decrease the file size and add additional detail to improve the image.
- D** Compression will decrease the file size and remove detail not visible to the human eye from the image.

Answer _____ [1]

[Turn over



(f) When playing movies via the Internet, buffering is used. Select the statement which is TRUE about the buffering process.

- A** It prevents lag when streaming a video file.
- B** It stores the downloaded file in ROM before playback.
- C** It increases the download speed of the user's internet connection.
- D** It permanently stores data following a file download.

Answer _____ [1]

(g) Mobile phones use an ADC to change sound input using a microphone into a format the computer can understand.

What do the letters ADC stand for?

- A** Analogue to Digital Changer
- B** Audio to Digital Converter
- C** Analogue to Digital Converter
- D** Audio to Digital Changer

Answer _____ [1]

(h) Big data can be defined by 3V's. What do the 3V's stand for?

- A** Variety, Validity, Velocity.
- B** Variety, Velocity, Virtual.
- C** Volume, Virtual, Validity.
- D** Volume, Variety, Velocity.

Answer _____ [1]



(i) Select the correct definition for the term backup.

- A A file which has been restored following damage to the original.
- B A copy of an original file used to restore data.
- C An encrypted version of a file.
- D A record of outdated files stored in another location.

Answer _____ [1]

2 On the left-hand side of the table below is a set of statements.

From the list provided below select the correct term that matches each statement.
(Not all terms are required.)

Capacity Portability Optical Storage
Cloud Storage Magnetic Storage

Statement	Term
Uses a laser to read and write dark and light locations as bits. Examples include CDs and Blu-Ray disks	[1]
The amount of data that a storage medium can hold	[1]
Holds data at a remote location	[1]

[Turn over



3 Below is part of a spreadsheet used to hold details about a school tuck shop.

	A	B	C	D	E	F	G	H	I	J
1	School Tuck Shop									JUNE 2022
2										
3	ITEM	COST PRICE	SELLING PRICE	PROFIT PER ITEM	NUMBER IN STOCK	NUMBER SOLD IN JUNE	PROFIT FOR JUNE	STOCK AT END OF MONTH	TOTAL STOCK COST	ORDER STOCK
4	Mars Bar	£0.40	£0.50	£0.10	65	65	£6.50	0	£26.00	OUT OF STOCK
5	Twix	£0.37	£0.45	£0.08	136	90	£7.20	46	£50.32	REORDER
6	Maltesers	£0.64	£0.80	£0.16	125	75	£12.00	50	£80.00	NO
7	Bounty	£0.35	£0.50	£0.15	200	71	£10.65	129	£70.00	NO
8	Coke	£0.34	£0.60	£0.26	300	215	£55.90	85	£102.00	NO
9							£92.25		£328.32	

(a) What data type is stored in cells C4:C8?

_____ [1]

(b) Name the formatting feature used on cells A1:C1.

_____ [1]

(c) What formula does cell G4 contain?

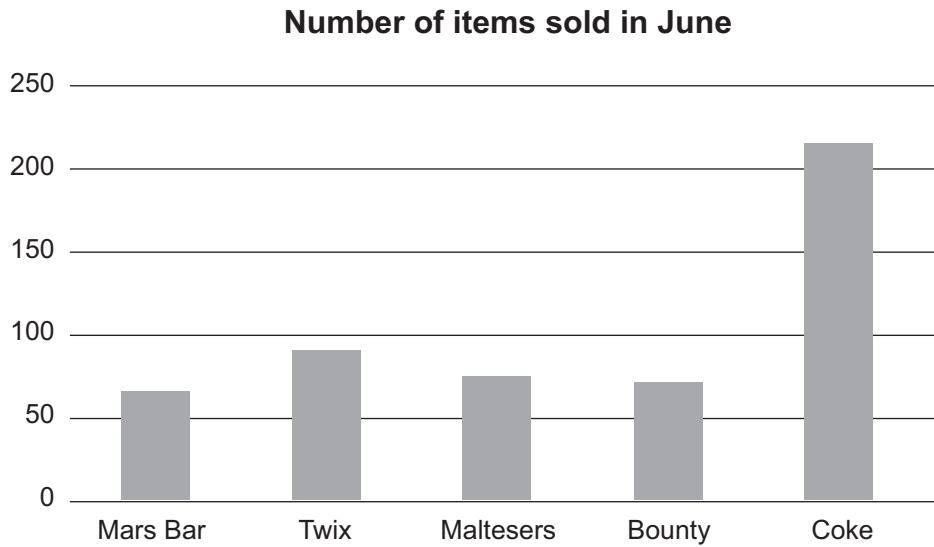
_____ [1]

(d) Give one example from the spreadsheet above of a cell range where replication of a formula is used.

_____ [1]



(e) State the cell references used to create the graph below.



[2]

(f) Stock is reordered when the figure for "STOCK AT END OF MONTH" falls below 50.

Place a tick (✓) beside the formula used in cell J4.

Formula	Tick (✓) Correct formula
=IF(H4<0,"OUT OF STOCK",IF(H4<=50,"REORDER","NO"))	
=IF(H4<=0,"OUT OF STOCK",IF(H4>=50,"NO","REORDER"))	
=IF(H4<=0,"OUT OF STOCK",IF(H4>50,"NO","REORDER"))	

[1]

[Turn over



The person running the tuck shop enters Fanta into cell B12 to test the VLOOKUP. The following results are displayed:

	A	B	C	D	E	F	G	H	I	J
1	School Tuck Shop									JUNE 2022
2										
3	ITEM	COST PRICE	SELLING PRICE	PROFIT PER ITEM	NUMBER IN STOCK	NUMBER SOLD IN JUNE	PROFIT FOR JUNE	STOCK AT END OF MONTH	TOTAL STOCK COST	ORDER STOCK
4	Mars Bar	£0.40	£0.50	£0.10	65	65	£6.50	0	£26.00	OUT OF STOCK
5	Twix	£0.37	£0.45	£0.08	136	90	£7.20	46	£50.32	REORDER
6	Maltesers	£0.64	£0.80	£0.16	125	75	£12.00	50	£80.00	NO
7	Bounty	£0.35	£0.50	£0.15	200	71	£10.65	129	£70.00	NO
8	Coke	£0.34	£0.60	£0.26	300	215	£55.90	85	£102.00	NO
9							£92.25		£328.32	
10										
11										
12	ITEM	Fanta								
13	SELLING PRICE	#N/A								

(ii) Explain why cell B13 contains the error message #N/A.

[1]

[Turn over



- 4 The Central Processing Unit (CPU) consists of the following main components: the Control Unit, the Arithmetic Logic Unit and the Immediate Access Store.

What role do the following components perform in the CPU?

The Arithmetic Logic Unit

The Immediate Access Store

[4]



5 John owns a small engineering company and is updating his hardware. He needs a printer to produce models of his products.

(a) (i) What type of printer can print a product in layers?

_____ [1]

(ii) Describe **one** advantage and **one** disadvantage of using this type of printer.

Advantage

_____ [1]

Disadvantage

_____ [1]

John uses utility programs to maintain his computer system.

(b) List **two** utility programs used for this purpose.

1. _____

2. _____ [2]

John also uses a graphic digitiser.

(c) Describe how this might assist his engineering company to produce digital images.

_____ [2]

[Turn over





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(Questions continue overleaf)

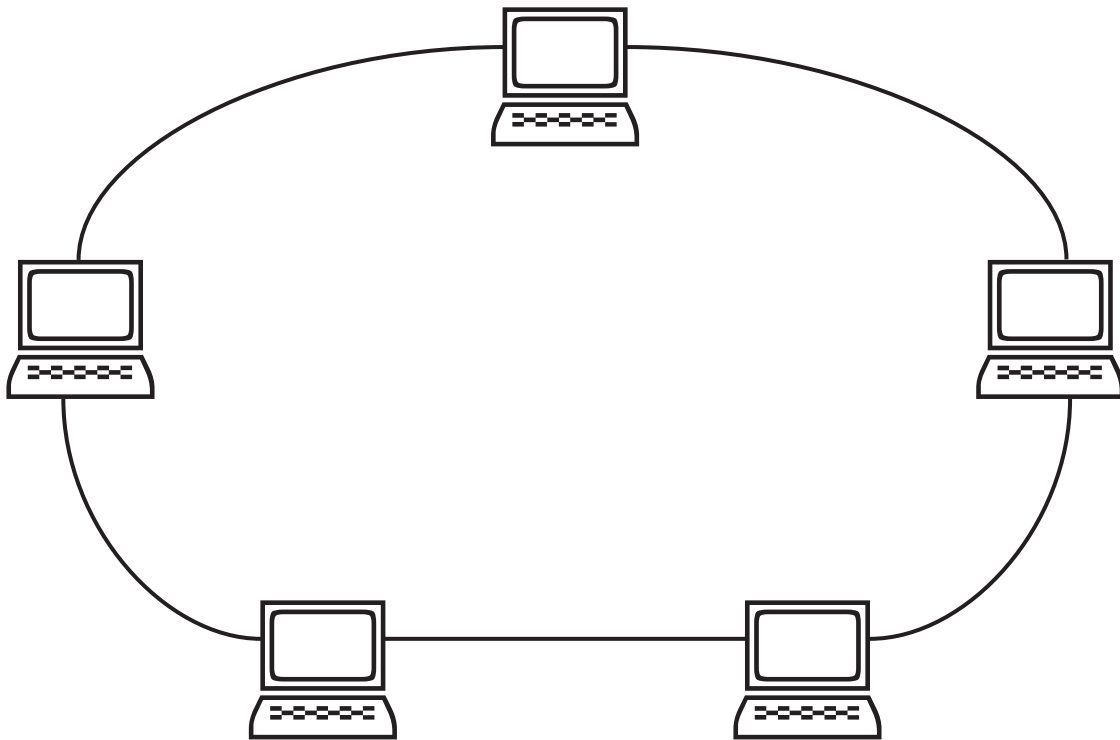
13171

[Turn over



24GDG1113

7 Networks within schools and businesses are a common feature. A diagram of a network topology is shown below.



(a) (i) What is the name of the network topology shown in the diagram?

_____ [1]

(ii) State **two** disadvantages associated with this type of network.

1. _____

2. _____ [2]



Data transfer is an important function of any network.

(b) (i) What is the role of a protocol in data transfer?

[2]

(ii) What do the letters FTP stand for?

[1]

(iii) Describe the purpose of HTTPS in data transfer.

[2]

(c) From the list provided below select the correct term that matches the definition.
(Not all terms are required.)

- WORM TROJAN HORSE SPYWARE PHISHING

Definition	Term
Software used to capture passwords, bank details and credit card details.	[1]
A program used by hackers to try to gain access to users' systems.	[1]
A program that replicates itself using up memory space.	[1]



8 (a) What is The Internet of Things (IoT)?

[1]

(b) (i) Complete the table by matching each term to the correct task.

WiFi

BLUETOOTH

Task	Term
Monitors smart devices whilst at home	[1]
Connects a smart watch to a smartphone	[1]

(ii) State **one** potential risk of using smart devices in everyday life.

[1]

(c) Place the following two words in the correct part of the sentence.

application

network

The Internet is the _____ that the World Wide Web uses to function
and the World Wide Web is the _____ that runs on the Internet. [2]



(d) In the table below, state whether the following statements are True or False with regard to fibre optic cable.

Statement	True or False
Fibre optic cable has a high bandwidth	[1]
Fibre optic cable transmits data as electrical signals	[1]
Fibre optic cables are less susceptible to interference	[1]
Data carried on fibre optic cables is easier to intercept than data carried on copper cables	[1]

[Turn over



9 Legislation is in place for digital technology users.

(a) Health and Safety laws protect computer users.

(i) Overuse of computers can cause RSI. What is RSI?

_____ [1]

(ii) How can a user adjust the settings on a computer monitor to minimise eyestrain?

_____ [1]

(b) (i) What is the name of the Act that protects the intellectual property rights of individuals and organisations?

_____ [1]

(ii) Give **one** example of how the law in (b)(i) could be breached by an individual.

_____ [1]



(c) (i) What is the official title of the person who is responsible for enforcing the Data Protection Act?

_____ [1]

(ii) State **three** principles of the Data Protection Act.

1. _____

2. _____

3. _____

_____ [3]

[Turn over



10 Jack uses a database to keep track of the customers in his computer repair shop.

He uses tables, queries, forms, reports and macros in his database.

(a) Complete the table below by matching each database tool with the correct task Jack could use it for. (Not all terms will be used.)

Queries	Forms	Reports	Macros
Task		Database Tool	
Collect data about customers.		[1]	
Print the results of processing.		[1]	
Provide shortcuts for repetitive tasks.		[1]	

Jack's database contains two tables with the following field headings shown below.

cust_TBL

cust_ID	surname	first_name	house_num	street	town	county	postcode	tel_num

repair_TBL

repair_ID	cust_ID	description	fee_payable	paid(Y/N)

(b) Use the database tables and field headings shown above to complete the following table.

Statement	Example
An example of a key field in cust_TBL.	[1]
An example of a field which stores data in currency format.	[1]
An example of a field which stores data as a boolean value.	[1]



(c) Jack has stored a list of customers' details in a text file like the one shown below.

```
cust_ID, surname, first_name, house_num, street, town, county, postcode, tel_num
1, Small, Gerard, 2, Main Street, Armagh, Co Armagh, BT37 8UJ, 07789548985
2, Matthews, Niamh, 23, High Street, Newry, Co Down, BT35 8YU, 07876359875
3, Brown, Alice, 98, Blacks Road, Belfast, Co Down, BT9 5RF, 07986587452
```

Use the words from the list below to complete the sentences which describe how Jack can easily add this information to his database table called cust_TBL. (Not all words in the list below will be used.)

import presence export CSV txt

Jack has stored his data in a special kind of text file called a _____ file.

He wants to bring data from the text file into his database table using the _____ process.

Jack wants to make sure that no field is left blank when data is added to cust_TBL. He can do this by adding a _____ check to each field.

[3]

(d) Jack wants to add validation checks to the data entered into repair_TBL.

Name the type of validation check he is using in each case.

- fee_payable should be between 20 and 100

[1]

- description should be no longer than 35 characters

[1]

[Turn over



11 (a) What is data portability?

[2]

(b) JPEG and TIFF file types support data portability.

(i) What do the letters JPEG stand for?

[1]

(ii) What do the letters TIFF stand for?

[1]



12 Tutoring Online provides classes in Digital Technology. The company uses a WAN and social media to communicate with students.

(a) What do the letters WAN stand for?

_____ [1]

Students often send personal details over the WAN to the company.

(b) (i) Personal details are encrypted. What is encryption?

_____ [2]

(ii) The company makes use of a firewall to protect its network. Describe how the network can be protected using a firewall.

_____ [2]

(c) Tutoring Online has advised students to have an up-to-date computer with a powerful processor. How could the processor of the computer affect its performance when using the Tutoring Online service?

_____ [2]

THIS IS THE END OF THE QUESTION PAPER



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For Examiner's use only	
Question Number	Marks
1	
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Total Marks	
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Examiner Number

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