**General Certificate of Secondary Education
2022**

Digital Technology

Unit 1:

(Compulsory Core)

Digital Technology

[GDG11]

MONDAY 23 MAY, AFTERNOON

MARK
SCHEME

General Marking Instructions

Introduction
Mark schemes are published to assist teachers and students in their preparation for examinations. Through the mark schemes teachers and students will be able to see what examiners are looking for in response to questions and exactly where the marks have been awarded. The publishing of the mark schemes may help to show that examiners are not concerned about finding out what a student does not know but rather with rewarding students for what they do know.

The Purpose of Mark Schemes
Examination papers are set and revised by teams of examiners and revisers appointed by the Council. The teams of examiners and revisers include experienced teachers who are familiar with the level and standards expected of students in schools and colleges.

The job of the examiners is to set the questions and the mark schemes; and the job of the revisers is to review the questions and mark schemes commenting on a large range of issues about which they must be satisfied before the question papers and mark schemes are finalised.

The questions and the mark schemes are developed in association with each other so that the issues of differentiation and positive achievement can be addressed right from the start. Mark schemes, therefore, are regarded as part of an integral process which begins with the setting of questions and ends with the marking of the examination.

The main purpose of the mark scheme is to provide a uniform basis for the marking process so that all the markers are following exactly the same instructions and making the same judgements in so far as this is possible. Before marking begins a standardising meeting is held where all the markers are briefed using the mark scheme and samples of the students' work in the form of scripts. Consideration is also given at this stage to any comments on the operational papers received from teachers and their organisations. During this meeting, and up to and including the end of the marking, there is provision for amendments to be made to the mark scheme. What is published represents this final form of the mark scheme.

It is important to recognise that in some cases there may well be other correct responses which are equally acceptable to those published: the mark scheme can only cover those responses which emerged in the examination. There may also be instances where certain judgements may have to be left to the experience of the examiner, for example, where there is no absolute correct response – all teachers will be familiar with making such judgements.

COVID-19 Context
Given the unprecedented circumstances presented by the COVID-19 public health crisis, senior examiners, under the instruction of CCEA awarding organisation, are required to train assistant examiners to apply the mark scheme in case of disrupted learning and lost teaching time. The interpretation and intended application of the mark scheme for this examination series will be communicated through the standardising meeting by the Chief or Principal Examiner and will be monitored through the supervision period. This paragraph will apply to examination series in 2021–2022 only.

1 **(a)** C. SSD, Hard Disk Drive, ROM, DVD

(b) C. Accept 800

(c) A. The number of bits processed over a certain period of time.

(d) B. Real-time processing is used for online booking systems and involves processing data as soon as it is entered into the system.

(e) D. Compression will decrease the file size and remove detail not visible to the human eye from the image.

(f) A. It prevents lag when streaming a video file.

(g) C. Analogue to Digital Converter

(h) D. Volume, Variety, Velocity

(i) B. A copy of an original file used to restore data.

9

2

Statement	Term
Storage that uses a laser to read and write dark and light locations as bits. Examples include CDs and Blu-Ray Disks	OPTICAL STORAGE [1]
The amount of data that a storage medium can hold	CAPACITY [1]
Storage that holds data at a remote location	CLOUD STORAGE [1]

3

3 **(a)** Any from: Currency [1]   [1]

(b) Merged/centred [1]   [1]

(c) =F4*D4
(C4 – B4) *F4   [1]
Accept Sum for this year only
"=" not necessary
'x' can be used to represent multiplication

(d) Any **one** from   G4/G5:G8
                                        H4/H5:H8
                                        I4/I5:I8
                                        J4/J5:J8
Accept cell ranges represented using '-' sign. e.g. H5–H8
Also accept cell ranges using 'to'. For example H5 to H8
Don't accept G9 or I9   [1]

(e) A4:A8 [1]
F4:F8 [1]
Accept only these answers   [2]

(f)

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]

(g) (i) =VLOOKUP(**B12**, $A$4:$C$8,**3**)

[1]   [1]   [2]

      (ii) Not in the Lookup list/Fanta not in lookup list
Accept answers which refer to the fact that Fanta is not on the
list/spreadsheet/item list/or Fanta does not meet the Vlookup criteria [1]   10

4 **Level 0 ([0])**
Answer is not worthy of credit.

Level 1 ([1])
The candidate mentions one or two roles performed. [1] The candidate makes
limited use of spelling, punctuation and grammar. The meaning of the text is not
always clear. The candidate demonstrates a limited form and style appropriate
to the question. The organisation of the answer is limited. There is little use of
specialist terms.

Level 2 ([2]–[3])
The candidate describes one role [2] or briefly describes two roles performed
in reasonable detail. [3] The candidate makes satisfactory use of spelling,
punctuation and grammar. The meaning of the text is usually clear. The
candidate demonstrates a satisfactory form and style appropriate to the
question. The organisation of the answer is satisfactory. There is some use of
specialist terms.

Level 3 ([4])
The candidate describes fully two roles performed in detail. [4] The candidate
makes good use of spelling, punctuation and grammar. The meaning of the text
is always clear. The candidate demonstrates good form and style appropriate
to the question. The organisation of the answer is good. There is good use of
specialist terms.

The Arithmetic Logic Unit
• Processes all the data inside the CPU.
• Performs all the mathematical operations/calculations, such as add,
  subtract, multiply and divide.
• Executes all the logical operations, such as true, false, greater than, less
  than equal to.

The Immediate Access Store
• Stores programs (temporarily) while they are being used
• Stores data (temporarily) while they are being used
• Essential to the fetch-execute cycle [4]   4

5 (a) (i) 3D Printer [1]

(ii) Advantage: Streamlines production/Printed using different materials/
Can produce a 3D model/visual model/prototype/object [1]
Disadvantage: Expensive to purchase/run/not economical for large
scale manufacturing [1]   [2]

(b) Any **two** from:
Disc defragmenter/cleanup [1]
Task scheduling/Task Manager/Example of task [1]
Backup [1]
Restore [1]
Anti Virus [1]
Firewall [1]   [2]

(c) Any **two** from:
image stored directly onto computer [1]
use of stylus [1]
draw freehand images [1]
image can be edited [1]   [2]   7

6   Level 0 ([0])
Answer is not worthy of credit.

Level 1 ([1]–[2])
The candidate mentions one or two [1] or describes one disadvantage [2]
for customers. The candidate makes limited use of spelling, punctuation
and grammar. The meaning of the text is not always clear. The candidate
demonstrates a limited form and style appropriate to the question.
The organisation of the answer is limited. There is little use of specialist terms.

Level 2 ([3]–[4])
The candidate describes in detail two disadvantage [3] or briefly describes
three disadvantages for customers [4]. The candidate makes satisfactory use
of spelling, punctuation and grammar. The meaning of the text is usually clear.
The candidate demonstrates a satisfactory form and style appropriate to the
question. The organisation of the answer is satisfactory. There is some use of
specialist terms.

Level 3 ([5]–[6])
The candidate describes fully three disadvantages for customers. The candidate
makes good use of spelling, punctuation and grammar. The meaning of the text
is always clear. The candidate demonstrates good form and style appropriate
to the question. The organisation of the answer is good. There is good use of
specialist terms.

Answer to include:

Website may not be authentic
Have to make choice by image and descriptions that may be misleading
Goods may not meet expectations e.g. faulty goods, sizing issues
Inconvenience of returning goods
Issue with obtaining a refund
Time delay receiving goods
Not arriving on time/at all
Cost of delivery can make goods more expensive
Security of financial transaction (Hacking)
Identity Theft

Do not accept answer relating to technology e.g. Elderly may not know
how to use a computer [6]

7 **(a)** **(i)** Ring [1]

(ii) Any **two** from:
If cable/computer/node fails the whole network fails [1] data travels in one direction [1] has to visit every machine before reaching destination [1] no central or controlling computer [1] network disruption when adding a node [1]
Don't accept reference to 'one breaks down' instead of cable/computer /node
Don't accept 'network/cable has to be broken' to add a node [2]

(b) **(i)** Any **two** from:
A set of rules/standards [1] to allow communication/transfer of data between two communication systems/networks/devices [1]
Do not accept answers relating to the secure transfer of data [2]

(ii) File Transfer Protocol [1]

(iii) Any **two** from:
Hypertext Transfer Protocol Secure [1] Enable the user to safely use the internet [1] to stop user files/data being corrupted/deleted/intercepted/stolen [1] e.g. when using online banking [1] [2]

(c)

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

[3]   11

8 **(a)** (Physical) devices that are connected to the internet. [1]

(b) **(i)**

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

[2]

(ii) Hacking/Reliability/Privacy Issues [1] [1]

(c) The Internet is the ___NETWORK [1]___ that the World Wide Web uses to function and the World Wide Web is the ____APPLICATION [1]___ that runs on the Internet. [2]

(d)

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

[4]   10

9 **(a)** **(i)** Repetitive strain injury [1]

(ii) Adjust brightness/contrast/resolution/zoom/colour [1]

(b) **(i)** Copyright Designs and Patents Act (1998) [1]

(ii) Listening to/Downloading music illegally/using unlicensed s/w
and other acceptable examples [1]

(c) **(i)** Information Commissioner [1]

(ii) Any **three** from:
Fair and lawful
Specific for purpose
Be adequate and only for what is needed
Accurate and up to date
Not kept longer than needed
Take into account people's rights
Kept safe and secure
Accept "Not transferred outside EU" [3]

8

10 **(a)**

Task	Database Tool Used
Collect data about customers	FORMS [1]
Print the results of processing	REPORTS [1]
Provide shortcuts for repetitive tasks	MACROS [1]

[3]

(b)

Statement	Example
An example of a key field in cust_TBL	cust_ID [1]
An example of a field which stores data in currency format	fee_payable [1]
An example of a field which stores as a boolean value	paid(Y/N) [1]

[3]

(c) Jack has stored his data in a special kind of text file called a_____CSV__
[1]_____ file.
He wants to bring data from the text file into his database table using the
IMPORT____[1]_____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 _____PRESENCE_____
[1]_____ check to each field. [3]

(d) • fee_payable should be between 20 and 100 RANGE CHECK [1]
• description should be no longer than 35 character LENGTH
CHECK [1] [2]

11

11 **(a)** Denotes data that can be (directly) transferred between hardware/
application devices [1] without having to be entered again converted. [1] [2]

   (b) (i) Joint Photographic Experts Group [1]

   (ii) Tagged Image File Format [1] 4

12 **(a)** Wide Area Network [1]

   (b) (i) **Two** from:
   encoding data/scrambling data [1]
   data is meaningless if intercepted [1]
   Using a key before it is transmitted [1]
   Unscramble/read/decrypted using a key [1] [2]

   (ii) **Two** from:
   monitors/controls incoming/outgoing data [1]
   blocks/filters data/prevents data being hacked/viruses/spam/
   unauthorised access [1]
   based on rules/standards/requires authentication [1] [2]

   (c) slow processor poor performance/faster processor better
   performance [1]
   suitable example [1]
   Do not accept 'bad'
   'old processor' is okay [2] 7

	Total	**90**