



**General Certificate of Secondary Education  
2023**

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**Digital Technology**

Unit 1:

(Compulsory Core)

Digital Technology

**[GDG11]**

**THURSDAY 18 MAY, AFTERNOON**

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**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.

- 1 (a)
- | Definition  | Term |
|---|------|
| The smallest unit of digital data that contains either 0 or 1 | BIT  |
| Can store 8 binary digits                                     | BYTE |
- [2]
- (b) Integer/Numeric (Do not accept number) [1]
- (c) (i) a number, e.g. 51/a code, e.g. CM101/a Module, e.g. Business or any other appropriate answer [1]
- (ii) Any **one** from:  
 Average Mark = 67/Maths 1 & 2  
 Average = 76/GCSE  
 Equivalence = B [1]  
 Mark for Communications is 57 or CM12 is the code for Business  
 NB Marks 57 is not a valid response, this response needs context or interpretation.

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- 2 (a)
- | Statement  | Tick (✓) |
|--|----------|
| When stretched the image can become blurred        |          |
| The image quality does not depend on resolution    | ✓        |
| The image takes up a lot of storage space          |          |
| The image can be stretched without loss of clarity | ✓        |
| There is no need to store individual pixel values  | ✓        |
- NB More than three rows ticked [0] [3]

- (b) The higher the resolution, the larger the file size/image size will be [1] or equivalent  
 More pixels, the larger the file/image size [1] or vice versa [2]

- (c) Shape circled
- Buffering is used to minimise interruptions to viewing

Buffering is used to hold the segments of the video that have been played
- [1]

- (d)
- | Statement  | Tick (✓) |
|--|----------|
| Increasing the sample rate increases the quality of the audio file | ✓ [1]    |
| Increasing the sample rate decreases the file size                 |          |
- [1]

- (e) Analogue Digital Conversion/Convertor [1]
- (f) The original file can be fully restored to its original state using LOSSLESS [1] compression. LOSSY [1] is a method of compression that means the data discarded can never be recovered [2]

3 (a) Data stored in a database will be held in one or more **TABLES** [1].

Each table will have a key field which is used to uniquely identify each **RECORD** [1].

A **QUERY** [1] can be used with criteria to locate specific data in a database. This data can then be displayed in a user-friendly format using a **REPORT** [1].

A **FORM** [1] can be used to add data to a database.

Some tasks in the database can be automated using a **MACRO** [1]. [6]

(b)

FieldName	Table	Description	Validation Method
clientID	clientTBL	Key field Must begin with C followed by 5 numeric characters, e.g. C12345	<b>FORMAT CHECK [1]</b> or <b>LENGTH CHECK [1]</b>
projectlength	projectTBL	Must be more than 1 day and less than 100 days	<b>RANGE [1]</b>
staffsurname	staffTBL	Can contain only alphabetic characters	<b>TYPE [1]</b>

[3]

9

4 (a) Merge/Centre [1]

(b) (i) No need for the = sign  
=SUM(C3:C7) (must use formula correctly. Brackets must be in the right place. No brackets [0] Sum must be used correctly)  
=C3+C4+C5+C6+C7 [1]

(ii) No need for the = sign  
=B3\*C3 =(B3\*C3) is acceptable. [1]

(c) When the formula is dragged/copied down [1] the cell reference doesn't change. [1] NB the emphasis is on cell reference not on the value. [2]

(d)

Formula	Tick (✓)
=IF(D3<C12, "YES", "NO")	
=IF(D3>C12, "YES", "NO")	✓ [1]
=IF(D3>=C12, "YES", "NO")	

[1]

(e) Bar chart/Column chart [1]

(f) Any **three** from:  
A2/A3:A7 [1] NB Can use A2/A3 - or : or to A7  
D2/D3:D7 [1]  
F2/F3:F7 [1]  
G2/G3:G7 [1] [3]

(g) Template [1]

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5 (a) Central Processing Unit [1]

(b) Any **two** from:  
 Memory/RAM allocation/Immediate Access Store [1]  
 Storage [1]  
 Processing Time/task scheduling/process scheduling [1]  
 Peripherals [1] [2]

(c)

Definition	Answer
Data is processed immediately on collection	Real-time [1]
Manages the sharing of CPU time and resources needed by many users	Multi-user [1]

[2]

(d) Utility (Programs/Software/Application) [1]

(e)

Device	Input or output	Example of use
Games controller	Input	Playing a video game
Microphone	Input [1]	Record sound for a TV presenter [1]/suitable example. Example must be in context of input. Digital Device/ Online, e.g. Recording a song. [1]
High-Definition display	Output [1]	Viewing high-definition content [1]/suitable example. Example Watching/Looking/ Viewing. Not Playing or Streaming. [1]

[4]

6 (a)

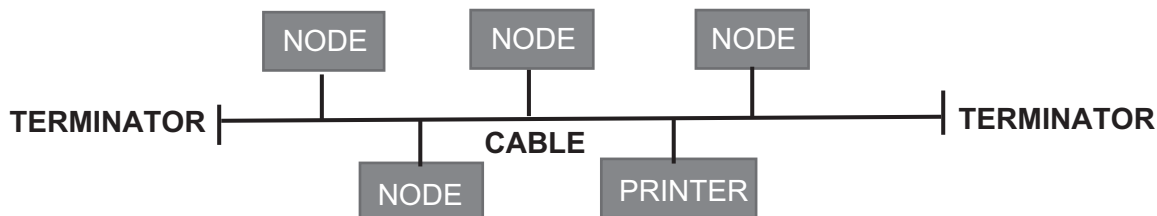
Tasks	Media
Connecting a mobile phone to wireless headphones	Bluetooth [1]
Accessing company files via the cloud while travelling	5G [1]
Connecting a business's LAN to the Internet	Fibre-optic [1]
Connecting a smart TV to a home network	Wi-Fi [1]

[4]

(b) The connection via the Internet of digital devices/enabling them to send and receive data or (Physical) devices that are connected to the Internet [1]  
 Do not accept "Objects"

AVAILABLE MARKS
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- 7 (a) Local Area Network [1]
- (b) The **ROUTER** [1] is used to connect the network to the Internet. On a wired network each device will connect to a **SWITCH** [1] using Ethernet cables. [2]
- (c) Draw diagram Cable/Backbone [1] Nodes/Computers/Workstation/Peripherals/Connected devices [1] Terminators [1]  
NB Wrong Topology [0] Ignore Switch/Router



- [3]
- (d) Any **one** from:  
Able to share files/able to communicate/share software/hardware/able to access files from any computer/updates can be carried out at one time [1]
- (e) NIC is required for a device to connect/communicate to a network/server [1]

- 8 (a) It is a set of rules [1] for defining methods of data communication between different devices/for sending/receiving data on a network [1] [2]
- (b) HTTPS [1]
- (c) An attempt to get personal or sensitive information/ask for information pretending to be someone else/or suitable alternative [1]

(d)

Definition	Term
Collects user information without permission and sends it to a remote computer.	SPYWARE [1]
Software that can self-replicate on networks and cause damage to data.	WORM [1]
Software used to record each key stroke on a computer.	KEY LOGGER

- [3]
- (e) Any **two** from:  
Data is unreadable/meaningless if intercepted [1]  
Encoding/scrambling data [1]  
Using a key before it is transmitted [1]  
Unscramble/read/decrypt using a key [1] [2]

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- 9 (a) Any **two** from:  
 Cloud computing is using the internet to provide services. [1]  
 Cloud computing is storing/and using software/services online, [1] use  
 a remote server/via the internet/online [1] to store/access/process data/  
 software services [1] instead of using your own hard drive/on site [1]  
 easy to increase storage capacity [1] [2]
- (b) Any **two** from:  
 Easy to access data from anywhere with an internet connection [1]  
 The cloud storage service manages backups [1] and security [1]  
 Additional storage provided without having to purchase more hardware [1]  
 Reduction in carbon footprint [1]  
 No need for business to hire IT staff to manage data [1] [2]  
 NB backup/unlimited storage not enough, they need to be qualified.
- (c) Any **two** from:  
 Provides gamers with a pay as you go option/pay per use/reduced cost  
 no - high street [1] or other qualification  
 Games are available for gamers to download/no need to purchase game [1]  
 Game installation not necessary/No large files to install [1]  
 Updates applied automatically [1]  
 Powerful hardware not required [1]  
 Gamers can play live games with other gamers via the cloud [1]  
 Saves progress [1] Access to game on any device [1] [2]
- 10 (a) Copyright Designs and Patents Act [1]  
 Only accept Act as stated here, do not mark anything else.

(b)

Principle	Tick (✓)
Data should be used fairly and lawfully	
Data should be adequate and relevant to the purpose for which it was collected	
Data should be kept without security	✓ [1]
Data should be kept for as long as the user of the data decides	✓ [1]
Data should be processed within the rights of the data subject	
Data should be kept accurate and up to date	

NB More than two rows clicked [0] [2]

- (c) (i) This person has overall responsibility for enforcing the Data Protection Act/provides advice to business and to government about issues related to DPA/investigate complaints raised about any issues relating to DPA/raises awareness [1]
- (ii) This person in a business decides what data the organisation needs to collect and how it will be used/applies for permission to collect and store data/is responsible to ensure collection, storage and processing of data is in accordance with the DPA [1]  
 Do not accept controls the data unless with full explanation.  
 NB do not accept the restatement of the Principles from the Data Protection Act.

AVAILABLE  
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**11 Level 0 ([0])**

Answer is not worthy of credit.

**Level 1 ([1]–[2])**

The candidate refers to one [1] or briefly to two [2] of the impacts of digital technology with employment in the correct context. The candidate makes limited use of spelling, punctuation, and grammar. The meaning of the text is not always clear. The candidate displays a limited form and style appropriate to the question. The organisation of the answer is limited.

**Level 2 ([3]–[4])**

The candidate describes how one [3] or two [4] of the impacts of digital technology with employment in the correct context. 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.

**Level 3 ([5]–[6])**

The candidate fully describes both impacts of digital technology with employment are used in the correct context. The candidate uses a good standard of spelling, punctuation, and grammar. The meaning of the text is always clear. The candidate demonstrates a good standard of form and style appropriate to the question. The organisation of the answer is good.

Answers may include:

- (a) Low skilled jobs have been lost (with the introduction robots, e.g. in car manufacture and warehousing)/automation of tasks/reference to banking/e-commerce  
Skilled jobs have been created/creation of new job opportunities/more job opportunities  
Robots have increased productivity  
Reliance on technology  
Working from home/any geographic location/flexible working hours/not limited [6]
- (b) Any **two** from:  
Limited human interaction/no group interaction  
Less teacher feedback  
Learners may feel isolated.  
All learners need to have access to a suitable computer  
People may not have a computer  
Poor hardware/internet  
No opportunity to ask questions  
No personal help  
Must be IT literate  
Potential distractions  
Will not suit all learning styles [2]

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12 (a)

Statements about processing	Response
Processing data fast enough to influence the behaviour of the next input	
Processing that enables several users to use the system at once	
Processing data all together during processor downtime	BATCH [1]

Batch must be in third row. Accept a tick in this row.

[1]

(b) Any **two** from for a maximum of [2]:

Backup is a copy of data or files [1]

Backups are made to ensure no data is lost by becoming corrupt, accidentally over written or deleted [1]

Backups are often made on separate storage drives or on a different server [1]

[2]

(c) He can compress the files [1]/optimise [1]

NB Answer must relate to Hard Drive.

[1]

**Total**

**AVAILABLE MARKS**

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**90**