



GCSE MARKING SCHEME

JANUARY 2017

**INFORMATION AND COMMUNICATION
TECHNOLOGY
UNIT 3: UNDERSTANDING ICT
4333/01**

INTRODUCTION

This marking scheme was used by WJEC for the 2017 examination. It was finalised after detailed discussion at examiners' conferences by all the examiners involved in the assessment. The conference was held shortly after the paper was taken so that reference could be made to the full range of candidates' responses, with photocopied scripts forming the basis of discussion. The aim of the conference was to ensure that the marking scheme was interpreted and applied in the same way by all examiners.

It is hoped that this information will be of assistance to centres but it is recognised at the same time that, without the benefit of participation in the examiners' conference, teachers may have different views on certain matters of detail or interpretation.

WJEC regrets that it cannot enter into any discussion or correspondence about this marking scheme.

GCSE ICT

JANUARY 2017 MARK SCHEME

Question	Answer	Max mark																	
1 (a)	Any three of: <ul style="list-style-type: none"> • Graphics tablet • Keyboard • Webcam • Microphone • Sensor (must have quantity) • Game controlling device <i>Any reasonable answer</i>	3	3																
1 (b)	Any three of: <ul style="list-style-type: none"> • Monitor • Plotter • Force feedback device • Printer (laser/inkjet) accept only one type of paper based printer (accept paper based printer if paper based printer given) • Laser cutter • 3D printer (accept 3D printer if paper based printer given) <i>Any reasonable answer</i>	3	3																
2 (a)	One mark for each: <ul style="list-style-type: none"> • Ring • Star • Bus/line • Accepted not expected: mesh, tree, hybrid 	3	3																
2 (b)	A LAN covers a <u>small area/one site or building</u> , A WAN covers a <u>large geographical area/multiple sites</u> . LAN e.g. <u>a school or a college</u> . WAN e.g. <u>the internet</u> . (1 mark for difference between two) (1 mark for each example)	1 1 1	3																
2 (c)	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">DESCRIPTION</th> <th style="width: 15%;">SWITCH</th> <th style="width: 15%;">GATEWAY</th> <th style="width: 15%;">INTRANET</th> </tr> </thead> <tbody> <tr> <td>A closed private internet.</td> <td align="center">1 <input type="checkbox"/></td> <td align="center">2 <input type="checkbox"/></td> <td align="center"><input checked="" type="checkbox"/></td> </tr> <tr> <td>Joins together two networks that use different base protocols.</td> <td align="center">4 <input type="checkbox"/></td> <td align="center"><input checked="" type="checkbox"/></td> <td align="center">6 <input type="checkbox"/></td> </tr> <tr> <td>Analyses each packet of data and then sends it to the computer it was intended for.</td> <td align="center"><input checked="" type="checkbox"/></td> <td align="center">8 <input type="checkbox"/></td> <td align="center">9 <input type="checkbox"/></td> </tr> </tbody> </table>	DESCRIPTION	SWITCH	GATEWAY	INTRANET	A closed private internet.	1 <input type="checkbox"/>	2 <input type="checkbox"/>	<input checked="" type="checkbox"/>	Joins together two networks that use different base protocols.	4 <input type="checkbox"/>	<input checked="" type="checkbox"/>	6 <input type="checkbox"/>	Analyses each packet of data and then sends it to the computer it was intended for.	<input checked="" type="checkbox"/>	8 <input type="checkbox"/>	9 <input type="checkbox"/>	1 1 1	3
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2 (d)	Any one of: <ul style="list-style-type: none"> • A device that connects separate LANs together to form one large LAN. • Joins together two networks that use the same base protocols. • Accepted not expected – is a device that links two LANs – bridges may convert data into the appropriate form for the other system. 	1	1																
2 (e)	Any one of: <ul style="list-style-type: none"> • A global computer network • A network of networks/interconnected networks. 	1	1																
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3 (b) (i)	Any two of: <ul style="list-style-type: none"> • No need to learn a lot of commands/step-by-step options are given so that the user doesn't have to remember anything • Little processing power/less memory needed • Extremely easy to use/intuitive. Someone who has never seen the interface before can work out what to do • Menu interfaces don't have to be visual, they can be spoken – good for telephones or for visually impaired people/can be used in noisy areas/public areas • Can be used with robust input systems/take a lot of physical damage 	2	2																
3 (b) (ii)	Any one of: <ul style="list-style-type: none"> • Poorly designed menu interface may be slow to use (could be worded as below) <ul style="list-style-type: none"> ○ It can be irritating if there are too many menu screens to work through – users get annoyed or bored if it takes too long ○ You often can't go to the exact place you want right at the start. You have to work your way through the menu screens even if you know where you want to get to ○ If the menu isn't organised properly it could cause frustration trying to find things ○ Can be tedious for experts ○ Waste time going through all the menus 	1	1																

4 (a)	<p>Feature A</p> <p>Any one of:</p> <ul style="list-style-type: none"> • Leaderboard (1) – banner located in a premium position on a website/used for advertising (1) • Hotspot (1) – graphical hyperlink (1) <p>Feature B</p> <ul style="list-style-type: none"> • Search box (1) – looks for matching pages/documents that contain one or more <u>keywords/word</u> specified by the user (1) <p>Feature C</p> <ul style="list-style-type: none"> • Hyperlink (1) – text based link to another URL (1) • Hyperlink (1) – link to another location(1)/to send an email (1) <p>Feature D</p> <ul style="list-style-type: none"> • Web icons (1) – a small picture or symbol that links to social media, a website or rss feed (1) 	2		
4 (b)	<ul style="list-style-type: none"> • Golden Triangle – the area which the eye <u>focuses</u> on <u>first</u> on a webpage <u>after a search</u> <p>Answer must have the correct area and the concept of following a search</p> <ul style="list-style-type: none"> • Power motors want to ensure that a link to their website appears within the golden triangle to increase traffic to the their website 	1	1	1
5 (a)	<p>Any three of:</p> <ul style="list-style-type: none"> • Zoom • Selection • Transforming • Sizing • Scaling • Copying • Moving • Brush settings • Toggling between layers 	<ul style="list-style-type: none"> • Layering • Distortion • Colour palette • Contrast • Brightness • Text • Cropping 	3	
5 (b)	<p>A graphic expressed mathematically as an equation.</p> <p>Graphics created from a series of geometric primitives (points lines and curves) stored as mathematical equations.</p> <p>Editable object–oriented graphics.</p>	1		1
5 (c)	<p>Any two of:</p> <ul style="list-style-type: none"> • Increased file sizes (NOT size on its own). • Unable to rescale without loss in quality. • Longer download times. • No longer able to edit individual parts of a grouped object. <p>Accept arguments that give advantages of vector graphics.</p>	2		2
5 (d) (i)	<p>Reducing the quality of the image/reducing dimensions (NOT size)/reducing the number of colours/reducing the resolution.</p>	1		1
5 (d) (ii)	<ul style="list-style-type: none"> • Faster uploads/downloads • Saves memory NOT reduces file size 	1	1	2

6 (a)	Expert system	1	1
6 (b)	Any two of: <ul style="list-style-type: none"> • The computer can store far more information than a human. It can draw on a wide variety of sources such as stored knowledge from books and case studies to help in diagnosis and advice. • The computer does not 'forget' or make mistakes. • Data can be kept up-to-date. • The expert system is always available 24 hours a day and will never 'retire'. • The system can be used at a distance over a network. So rural areas or remote sites have access to experts. • Provides accurate predictions with probabilities of all possible problems with more accurate advice. • Diagnoses faults more quickly than the customer. • Customer reassured that diagnosis is correct/second opinion. 	2	2
6 (c)	Any two of: <ul style="list-style-type: none"> • Over reliance upon computers. • Some mechanics could be de-skilled by over dependence upon computer advice. • Fewer mechanics could be needed. • Dependent upon the correct information being given. If data or rules wrong the wrong advice could be given. 	2	2
7 (a)	Any two of: <ul style="list-style-type: none"> • Spray painting. • Welding. • Lift heavy items/carrying parts. • Testing engines. • Assembly of parts. 	2	2
7 (b)	Any three of: <ul style="list-style-type: none"> • Can do repetitive, difficult, tedious jobs. • Jobs are done to the same consistent standard. • Can work 24 hours a day 365 days a year. • Can work in dangerous/unhealthy places. • Can be quickly taught new skills by changing the program or a human taking them through the motions of a new skill. • Do not need to have a heated or lit environment saving on utility costs. • Saves on employment costs. 	3	3
7 (c)	Any three of: <ul style="list-style-type: none"> • Initial expensive development costs. • Unemployment due to many assembly line jobs now being done by robots/loss of human jobs. • Possible need for extra space/new technology to accommodate robots. • Staff training to set up or use robots. • Limited functionality. • Lacks common sense. Robots do not react quickly to situations they have not been programmed to deal with. 	3	3

9 (a)		Data Protection Act	Regulation of Investigatory Powers Act	Computer Misuse Act		
	Interception of a communication in the interests of national security	1 <input type="checkbox"/>	<input checked="" type="checkbox"/>	3 <input type="checkbox"/>	1	
	Unauthorised access with intent to commit or facilitate a crime	4 <input type="checkbox"/>	5 <input type="checkbox"/>	<input checked="" type="checkbox"/>	1	
	Data must be adequate, relevant, not excessive	<input checked="" type="checkbox"/>	8 <input type="checkbox"/>	9 <input type="checkbox"/>	1	3
9 (b)	Any one of: <ul style="list-style-type: none"> • Cryptographic services in the UK. • Legal status of electronic signatures. 				1	1

Indicative content

No more than four marks from any section
One mark for first column (item), one mark for expansion

Section 1 Creating music

A sequencers:	Multi track recording. This builds up complex files by layering them with simpler ones. Usually has a library of sound files and musical instruments which can also be used by the non-musician.
Notators:	Musicians write music scores in the traditional way on the computer and the computer plays it. Again it can be edited, change the tempo, add lyrics, extract individual instrument parts etc.
Sound Wave Editors:	Edit sound wave patterns.

Section 2 Storage of music

Mp3 MPEG Layer 3 sound file	<ul style="list-style-type: none"> • It made the sound files small • Download quickly but still have very good quality.
.wav waveform	<ul style="list-style-type: none"> • A basic uncompressed sound file so don't lose original quality. • Portable and can be played on most machines.
wma Windows Media Audio (WMA)	<ul style="list-style-type: none"> • Microsoft claims that audio encoded with WMA sounds better than MP3 at the same bit rate. • Microsoft also claims that audio encoded with WMA at lower bit rates sound better than MP3 at higher bit rates.
.MID Musical instrument digital interface	<ul style="list-style-type: none"> • Midis are sequenced music files made on keyboards. They're usually really small. • The sound quality depends upon the quality of the sound card.

Section 3 Specialist hardware

Sound card	<ul style="list-style-type: none"> • Conversion from analogue to digital and vice versa. • An expansion board that enables a computer to manipulate and output sounds. The sound card does the conversion from analogue to digital and vice versa. • Sound is in the form of analogue waves which must be digitized in order to be processed by a computer. • Sound cards enable the computer to output sound through speakers connected to the board. In order to hear your digital music, the digital information must be turned into analogue waves and amplified through speakers.
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	<ul style="list-style-type: none"> • Sound cards use two basic methods to translate digital data into analogue sounds: <ul style="list-style-type: none"> ○ FM Synthesis mimics different musical instruments according to built-in formulas. ○ Wavetable Synthesis relies on recordings of actual instruments to produce sound. ○ Wavetable synthesis produces more accurate sound, but is also more expensive. • Sound cards are necessary for nearly all CD-ROMs and have become commonplace on modern personal computers. • Nearly all sound cards support MIDI. 		
Input devices	<ul style="list-style-type: none"> • Inputs can come from <u>microphones</u>. • Electronic <u>MIDI</u> keyboards (Musical Instrument Digital Interface). 		
Disc storage	<ul style="list-style-type: none"> • <u>Large</u> disks capacity are used to store music. 		
Speakers	<ul style="list-style-type: none"> • In order to hear your digital music, the digital information must be <u>turned into analogue waves</u> and amplified through speakers. <i>(Not if given as sound card expansion).</i> 		
Routers/broadband/wifi	<ul style="list-style-type: none"> • Allow streaming/uploading. 		
8–10 marks	Candidates give a clear, coherent answer fully and accurately describing music creation software, storage and specialist hardware to the company. They use appropriate terminology and accurate spelling, punctuation and grammar.		
4–7 marks	Candidates give some music creation software, storage and specialist hardware, but responses lack clarity. There are a few errors in spelling, punctuation and grammar		
1–3 marks	Candidates give at least one of music creation software, storage or specialist hardware. The response lacks clarity and there are significant errors in spelling, punctuation and grammar.		
0 marks	No valid response.		
TOTAL			80
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