GCSE MARKING SCHEME

JANUARY 2016

INFORMATION AND COMMUNICATION TECHNOLOGY- UNIT 3
4333/01

INTRODUCTION

This marking scheme was used by WJEC for the 2016 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.

1	• Graphics tablet	1	
	• Microphone	1	
	• Keyboard	1	
	• Mouse	1	
	• Webcam	1	
	(1,4,7,9,10)		5
2ai	A type of search that looks for matching pages/documents (products) that contain one or more words specified by the user. e.g. Type the name and find the product	1	1
2aii	1 mark for each feature named x 4	4	
	1 mark for each suitable example use x 4	4	
	Digital images / Banner - showing how a product looks from different aspects, customisation/ combination of images etc.		
	Movie/Videos - demonstration videos showing a product in action		
	Animation - Rotate image/zoom to see detail		
	Music/sound - preview music tracks before purchasing them		
	Quizzes - customer competition / giveaway to raise organisations profile		
	Questionnaire - customer satisfaction questionnaires		
	Games - Download trial versions		
	Links/hotspots/ menu/button - to allow user to access further information about a product		
	Example use can relate to multiple multimedia features Candidates can mix and match example use, but only award example once		8
2b	Any one of:		
	• very time consuming / expensive to produce multimedia software	1	
	• places high demand on hardware / memory / processor		
	• scripting incompatibility		
	• large file sizes take a long time to load		
	• accessibility issues		
	• web page not formatted properly when printed		
	• uses lots of power-battery runs down quicker on portable devices		1

3a	• Star	1	
	• Bus / Line	1	2
3bi	A **GATEWAY** joins together two networks that use different base protocols.	1	1
3bii	A **SWITCH** analyses each **PACKET** of data and then sends it to the computer it was intended for.	1 1	2
3biii	A device that connects separate **LANs** together to form one large LAN is called a **BRIDGE**	1 1	2
3c	**Intranet** An intranet is a <u>closed</u>/<u>private</u> network (accessed only by the employees of an organisation) **Extranet** An extranet is the same as an intranet, but can be accessed by people that are not employees of an organisation, e.g. customer.	1 1	2
4a	• A gradual blending together of two or more fill colours **- Gradient** • Imaging effects or images are applied and placed over or under an image **- Layering** • A graphic that repeats and is used to fill shapes and backgrounds **– Composite patterning** (2,6,7)	1 1 1	3
4b	A graphic made up of <u>pixels</u>	1	1
4c	Any two of: • A graphic expressed <u>mathematically</u>. • <u>instructions</u> for drawing the shape are <u>stored</u>. • graphics that use polygons/geometric shapes/objects.	1 1	2
4d	Any two of: • Vector graphics can be enlarged without loss of quality • Can edit individual parts of a grouped object • Smaller file sizes • Faster to download/upload **NOT** 'less space'	1 1	2
4e	1 mark for naming a format x 2 1 mark for each different advantage x 2 1 mark for each different disadvantage x 2 **JPEG** Advantages: • Smaller file sizes • Quicker to download so suitable for webpages • 24-bit colour, with up to 16 million colours / ideal for images that use more than 256 colours • Rich colours, great for photographs that needs fine attention to colour detail • Most used and most widely accepted image format • Compatible on most operating systems	2 2 2	

			6
	Disadvantages:		
	• Lossy compression - they tend to discard a lot of data / loss in quality		
	• After compression, JPEG tends to create artefacts		
	• Cannot be animated		
	• Does not support transparency		
	GIF		
	Advantages:		
	• Can support transparency		
	• Can do small animation effects		
	• Lossless compression – they contain the same amount of quality as the original (except of course it now only has 256 colours)		
	• Great for images with limited colours, or with flat regions of colour		
	• Like the JPG, the GIF file format is commonly used on the web		
	• It is ideal for images that have large blocks of a single colour / A picture that has only a few colours could be saved in a smaller file size than a jpeg but have better quality.		
	Disadvantages:		
	• Only supports 256 colours		
	• Sometimes, the file size is larger than PNG		
	• Animated GIFs cannot be edited		
	BMP		
	Advantages:		
	• Bitmap files may be easily created from existing pixel data stored in an array in memory		
	• Pixel colours can be modified individually or as large groups		
	• Bitmap files may translate well to dot-format output devices such as printers		
	• Bitmap files are supported by most O/S		
	• Most suitable for icons and small images		
	Disadvantages:		
	• Does not scale or compress well		
	• Large file sizes - not web friendly or mac friendly		
	TIFF		
	Advantages:		
	• Very flexible format, it supports several types of compression like JPEG, LZW, ZIP or no compression at all.		
	• High quality image format, all colour and data information are stored / can be saved without compression to retain 100 per cent of the original image taken - where each pixel is identical to the original image taken		
	• TIFF format can be saved with layers		
	• Can be saved with transparent background		

		Disadvantages: • Very large file size • Slow to download and slow loading time **PNG** Advantages: • Lossless - does not lose quality and detail after image compression • Better than GIF as often creates smaller file sizes than GIF • Supports transparency better than GIF. Disadvantages: • Not good for large images because they tend to generate a very large file sizes • Sometimes creates larger files than JPEG • Cannot be animated • Not all web browsers can support PNG. **NO** repeated advantages/disadvantages.		
5a	Graphical User Interface / GUI **NOT** WIMP **NOT** Windows	1	1
5b	Any three of: • Windows • Icons • Menus • Pointers / mouse • Assistants / help files / online help • Tutorials • Favourite settings / change environment / adding widgets / customisation • (Keyboard) Shortcuts / Hot keys • Task bar / Ribbon bar / Tabs/ Customised toolbar • WIMP (only award if none of Windows, Icons, Menus, Pointers given as examples) **NOT** pictures or images **NOT** Colour	1 1 1	3
6a	Software / program (1) that controls / runs the computer system / allows the computer to function (1)	2	2

6b	Any three of: • maximises use of RAM • enables software to run / runs software/ run application • manages system resources (cores) • manages energy consumption • organises the hard drive • maximises the use of the memory • controls hardware / it handles inputs and outputs from peripherals • deals with interrupts • deals with errors • provides user interface • boots up / shuts down the computer • manages multi-tasking • manages multi-access • manages security • manages user accounts **NOT** 'runs the computer/system'	1 1 1		3
6c	Auto-pilot on an aeroplane **- Real-time control processing** Purchasing items online **- Real-time transaction processing** Producing monthly bank statements to send out to customers - **Batch processing** (2,6,7)	1 1 1		3
7a	Payroll	1		1
7b	**Common item (any one of):** • Payroll Number • Employee/Worker ID • Employee/Worker Number **Master file (any two of):** • Name • Address • NI Number • Job title • Date of birth • Date started • Tax rate/tax code • Bank account • Gross pay to date • Net pay to date • Holiday pay to date • Sick pay to date • Overtime pay to date • Bonuses to date • Pension contribution to date • Union contribution to date • Student loan contributions to date Accept any reasonable item	1 2		5

	Transaction file (any two of): • Transaction ID • Date • Hours worked	2	
8a	Application of **biology** to the study and design of **robots** e.g. giving humans/animals (replacement) robotic parts	1	1
8b	Any two of: • Can do repetitive tedious jobs • Jobs are done to the same consistent standard • Can work 24 hours a day 365 days a year • Can work in dangerous places • Can work in 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	1 1	2
8c	Any two of: • 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 • Cost of maintenance/running costs • 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	1 1	2
8d	Any one of: • Computer systems performing tasks normally requiring human intelligence • Learning computers *Accept* computer that thinks like a person **NOT** computer that carries out human tasks	1	1
9a	Digital signatures are legally binding in the same way as handwritten signatures **- ECA** Unauthorised modification of computer data **– CMA** **(2,4)**	1 1	2
9b	Any two of: • Regulates the powers of public bodies • Allows them to carry out surveillance (and investigations) • Allows them to intercept communications	1 1	2

9c	Any two of: • Provide foot supports • Make sure lighting is suitable • Make sure there is sufficient space for people to work • Train employees how to use work stations correctly • Ensure employees have sufficient breaks • Pay for regular eye sight tests for anyone who needs prescription glasses in order to use the computer • Provide correct seating • Provide desks at the right height	1 1	2
10	**9-12 marks** The candidate has: • shown clear understanding of the requirements of the question and a clear knowledge of the indicative content. Clear knowledge is defined as a response that names four animation techniques and provides relevant detailed points on each of their uses, which relate to the indicative content • used appropriate technical terminology referring to the indicative content confidently and accurately. **5-8 marks** • shown adequate understanding of the requirements of the question and a satisfactory knowledge of the animation techniques and their uses as specified in the indicative content. Satisfactory knowledge is defined as a response that provides two to three animation techniques and uses as signalled in the indicative content • used appropriate technical terminology referring to the indicative content. **1-4 marks** • attempted to address the question but has demonstrated superficial knowledge of the topics specified in the indicative content. Superficial knowledge is defined as a response that provides one to two animation techniques and uses as signalled in the indicative content • used limited technical terminology referring to the indicative content Indicative content **Key frame / Tweening** • The animator could draw the start and end points / key frames • of the object and allow the computer to generate the in-between frames **Stop motion / Claymation / Flip books** • The animator could use a model and move it a small amount each time between taking photographs • When you play the pictures/frames back, it appears as if the object is moving.	12	12

3D animation
- The animator could use layering effects
- Combining the layers builds up to create a more realistic / complex animation

Rotoscoping
- Photograph or film a real-life object and tracing each frame
- Create a life like motion / cartoon like appearance

Onion skinning
- The animator could make previous frames visible
- Helps plan the next frame and give a smoother animation

Cloning
- Object / frame is duplicated
- Minor alterations / edited

Or

Cloning, e.g. removing objects from a photo or copying objects (1) and making changes to them or assembling them all in one scene (1) e.g. putting someone in a different background photo

Persistence of vision
The human eye / retina / brain continues to see an image for a short period after the image has disappeared (1)
or
The process by which the eye is fooled into thinking that still pictures are moving (1)
Look for the idea of retention of image when it is no longer there

Pixilation
A stationary camera records a posed human/ subject. (1)
The human/subject moves to a new position and a photo is taken(1)

Looping.
An animation can be set to repeat (1) continuously and endlessly repeat the animation or to only do it for a fixed amount of times (timing) (1)

Grouping
Combining separate objects into one object (1) to animate them at the same time (1)

TOTAL	80	80

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