wjec cbac

GCE AS MARKING SCHEME

SUMMER 2022

AS (NEW) INFORMATION AND COMMUNICATION TECHNOLOGY - UNIT 1 2530U10-1

INTRODUCTION

This marking scheme was used by WJEC for the 2022 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.

GCE INFORMATION AND COMMUNICATION TECHNOLOGY

SUMMER 2022 MARK SCHEME

Q.	Marking Scheme	Mark
1. (a)	Award up to 2 marks per advantage from:	1
	 Faster to enter/type the data / speed of data entry Processing is faster (because less RAM required) or faster to search/query (pattern matching) 	1
	• Takes up less (storage) space on the hard drive / database / RAM / memory.	
	NOT More data can appear on the screen NOT less space NOT storage space	
	NOT anything connected to security.	
	NOT less chance of getting RSI.	
	NOT easier to query a database	
	Encoding is not encryption.	
(b)	(Problem must match example to get two marks) The following, with an appropriate/sensible example. Note - A well-argued example could gain both marks.	2
	Problem	
	Coarsening Data	
	 Encoding can coarsen data 	
	 Limited choice leading to less accurate data Limited choice leading to loss of precision 	
	 Data less detailed / lack specificity 	
	Frample	
	Not enough categories when representing eye colour, or age groups (when finding the mean have to assume all at the midpoint for grouped data)	
	BUT NOT just answers like bracketing 34 year olds with 26 year olds causes problems.	
	Examples of one mark answers	
	Coarsening data leading to loss of precision	
	Limited Choice leading to less accurate data	
	Examples of two mark answer	
	Coarsening data can lead to loss of precision if dark brown, mousy brown, light	
	brown are all classed as brown.	
	NOT unable to understand the code or mixing up the code	

Q.	Marking Scheme	Mark
2.	Award 1 mark for human resource cost and 1 mark for time cost per stage x3	
	Indicative content	
	Data Collection Human: New staff have to be employed to go and ask people questions or get people to fill in forms. (NOT just collecting information) Time: Training takes time and is needed to show the team how to collect the data. Or time it takes to hand out surveys and take them back in / time to fill out questionnaires	2
	Data Entry Human: New staff have to be employed to type in the results of the data collection. Time: It takes time for someone to type in the data which takes them away from another job / time to type in data when it could be used more efficiently elsewhere.	2
	Maintenance/Updating Human: Staff have to be employed to keep the hardware running Time: Takes time to <u>modify the software</u> when legislation changes or bugs are found. Could make points about checking the data but have to be specific	2
	NOT to just look after the system NOT just new staff / staff employed - have to be specific uses	

Q.	Marking Scheme	Mark
3.	Any three (description and example) x3	3x2
	Description Accurate - There should be no mistakes in the data	
	 Examples If there is an error in a pupil's phone number then a parent cannot be contacted in an emergency 	
	Description Understandable – The <u>meaning</u> of any information should be clear to the user	
	 Examples If the information is in a very complicated format then it will waste time and people could draw the wrong conclusions from it. A manager might misunderstand a complex table and order the wrong items. 	
	Encoding is not a viable example	
	Description Relevant – Data has to be related to the task/topic you are trying to investigate.	
	 Examples There is no point using information about babies from people whose children are in their late teens. No good collecting information on ice-cream sales in Alaska in the winter if you want to open your kiosk in California. 	
	Description Up-to-date - Information changes with time and without a date stamp could be too old to be useful OR means that the data is not too old to be useful.	
	Examples A travel company would not have much profit from using 10 year old data on holiday patterns to decide which resorts to offer this year. Using a five year old mailing list might end up in letters being sent to dead people or people who have moved.	
	(Time has to be either stated or implied).	
	If name 3 factors but do not give a valid description of any of them can award a mark	
	NOT Complete or Correctly targeted	
L		

Q.		Marking Scheme		Mark
4.	Award 1 mark for Use and Award 1 mark for Advant	d award 1 mark for extens ages x2	sion x2	2x3
	Use and extension (any 2	<u>:)</u>		
	Indicative Content			
	Examples Use	Example extension	Advantage	
	Smart home metering system / Smart thermostats /(Nest) (Hive) /Tank level Smart heating (1)	Remote turn up if cold weather/turning down when away (from phone) / control heating from your mobile phone	Saves resources and money on heating bills/energy resources	
		(1)	Learns heating and lighting patterns	
		Monitoring of water, oil and gas levels in storage tanks and cisterns.	Doesn't run out	
		Seeing how much each drive is costing you.		
	Smart outlets (1)	Remotely turn on or off any device, track a device's energy usage and receive personalised notification from your smartphone (1)	Saves energy/battery use	
	Control of building	Access control to	Increased security	
	phone apps.(1)	areas and detection of people in non- authorized areas.	Don't have to carry keys or risk losing them	
		Control of access to garages and front gates using wireless		
	ICT to monitor and manage smart devices such as fridges etc/ Thinking Fridge / Smart Fridge (1)	Fridge automatically orders food when it notices that items are getting low.(1)	Less food wasted Don't run out of essential items.	
	Smart speakers / assistant/Smart tv/Smartwatch	Control the lighting, heating, sockets, answer the doorbell (even when out)	Can tell where to deliver when you are out	

Q.	Marking Scheme	Mark
5.	Award 1 mark for description and 1 mark for use x3	3 x2
	Query <u>Description</u> A query is when you interrogate (search/sort/filter/ask a question) a database to find some information.	
	<u>Use</u> Customer requests to see if a product is in stock/Search for products closer to their sell by date/A search to find all the stores who are not meeting targets to boost company profits. Examples need to indicate what looking for and why to show whether the query is appropriate .	
	Report <u>Description</u> Report – The output from a database in which the results are presented in a way that is controlled by the user. (formatted i.e. tables/graphs/grouping/statistical summary/results of searches)	
	NOT 'It is a printout'	
	Use Produce lists of daily sales/ produce re-order lists/Producing (formatted) lists of store profits so that the manager can interview failing staff	
	 Import/export <u>Description</u> Import/export – The ability of a piece of software to read and use the data produced by a different piece of software. Transferring data/information from one piece of software/application to another. 	
	<u>Use</u> Exporting names and addresses into a word processing program to produce appointment reminder letters for the store managers / Send out letters with latest offers to loyalty card holders / print labels for products / automatically re-order goods below the re-order level.	
	A mark for the example can be given if the definition is wrong but their answer involves formatting.	
	A well-argued example of use can gain the description mark	

Q.	Marking Scheme	Mark
6.	Award up to 2 marks for the definition and up to 4 marks for the advantages First mark is for device / card second for contactless / proximity / wireless Advantages must be described / qualified	2
	Indicative content	2
	Wireless /no internet connection / close proximity It is a method of wireless data transfer that detects and then enables technology in close proximity to communicate without the need for an internet connection. (1)	
	Enabled payment Card / Mobile device/ app / contactless card reader It is an app which gives users the ability to link up their credit and debit cards and then use their phone with contactless readers (1)	4
	Award one mark per advantages /extension up to a maximum of 4 Category title not needed if example clear	
	Quick/ Convenient: The convenience of payment is one of this system's greatest advantages.	
	 NFC makes it very easy for users to make <u>instant payments via their smartphones</u> and tablets using their mobile wallet. It helps users <u>easily</u> perform financial transactions <u>at the touch or tap of their</u> 	
	 screen. If forgotten pin can still pay a bill under £100. 	
	Versatile: example of uses NFC is very versatile, in that it covers a range of different industries and services. This mode of payment can be used for the purposes of mobile banking, reserving restaurant seats and movie passes, booking train tickets, getting real-time updates on expenditure and reward points, redeeming points, redeeming rewards and coupons.	
	 Better User Experience: This system is beneficial for enterprises too – companies that readily adopt the latest technology are viewed by customers as being dynamic and progressive. Using this technology also helps them serve their customers better by presenting them with an easy and hassle-free mode of payment. Offering better user experience helps establishments enhance their <u>own productivity and efficiency</u>, (not just speed) enables them to sustain customer loyalty, and attract new customers. 	
	More Secure : Using mobile wallets is, to an extent, safer than using physical credit cards.	
	 In the unfortunate event of theft of the mobile device, the user's credit card information is password and pin protected. This adds on an additional layer of safety. 	
	• NFC enabled credit cards are built to be more secure than the magnetic strip of a regular credit card.	
	 Whilst using this system of payment, retailers have no <u>physical access</u> to customers' credit card information. Limit on amount that can be paid which limits loss 	
	Healthier / More Hygienic Less chance of picking up bugs at the checkout	

Q.	Marking Scheme	Mark
	Accepted but not expected	
	 Seamless: NFC has been found beneficial in the academic arena as well. The <u>high level of encryption</u> enables institutions to employ it as a sort of security system, which does an accurate ID on students entering and exiting the premises. Employees of companies use this technology to seamlessly interact in the office environment, <u>sharing real-time information</u> with each other. 	

Q.	Marking Scheme	Mark
7.	Award up to 8 marks for any point but must include 1 point from each use and one advantage and disadvantage to get full marks.	8
	NOT expensive twice	
	 SURGICAL USE /Robotic surgery is the use of robots in performing surgery. <u>Supervisory-controlled systems</u> - Robots do the surgery Human surgeon must input data into the robot. Robots follow a specific set of instructions when performing a surgery. (Programming) Surgeons use scans and map the operation before programming the robot to do the surgery. One common use for these robots is in hip and knee replacement procedures. The robot's job is to drill existing bone so that an implant fits snugly into the new joint. Robotic arms carry out those movements to perform the actual surgery on the patient. 	
	• The Stormram 4, as the robot is named, is made from 3D-printed plastic and is driven by air pressure. The advantage of plastic is that the robot can be used in an MRI scanner. Carrying out a biopsy during a scan in an MRI significantly increases accuracy.	
	 Using a robotic arm and cameras to perform surgery – under the direction of a human surgeon / Endoscopy: The da Vinci Surgical System. Uses technology that allows the human surgeon to use cameras to see things in more detail and depth/the surgeon looks into a viewfinder to examine the 3-D images being sent by the camera inside the patient. /The surgeon uses joystick-like controls located underneath the screen to manipulate the surgical instruments. 	
	 Shared-control system- surgeons do the surgery but constrained by robots. In orthopaedic surgery, as the surgeon approaches the soft tissue, the robot pushes back against the surgeon's hand to avoid touching and damaging the soft tissue One use is in neurosurgery where the surgeon rests his arm on robot arm while controlling the movement of the robot arm and the robot provides tremor and stabilizing control 	
	REHABILITATION	
	 Uses These include robots that help patients rehabilitate from serious conditions like strokes, empathic robots that assist in the care of older or physically/mentally challenged individuals These play a crucial role in the recovery of people with disabilities, including improved mobility, strength, coordination, and quality of life. These robots can be programmed to adapt to the condition of each patient as they recover from strokes, traumatic brain or spinal cord injuries, or neurobehavioral or neuromuscular diseases such as multiple sclerosis. Virtual reality integrated with rehabilitation robots can also improve balance, walking, and other motor functions. 	

Q.	Marking Scheme	Mark
	 Example: Assistive Telemanipulation : Manus ARM (assistive robotic manipulator), which is a wheelchair-mounted robotic arm that is controlled using a chin switch or other input device./That process is called and is similar to an astronaut's controlling a spacecraft's robot arm from inside the spacecraft's cockpit. Powered wheelchairs are another example of teleoperated, assistive robots. 	
	 Examples: Therapeutic Therapy robot, which is sometimes called a rehabilitator/Therapy robots are machines/exoskeletons or tools for rehabilitation therapists that allow patients to perform practice movements aided by the robot. Exoskeleton systems allow to achieve a selective control of movement of joints and articulation torques. MIT-Manus, helped stroke patients to reach across a tabletop if they were unable to perform the task by themselves Another therapy robot, the Lokomat, supports the weight of a person and moves the legs in a walking pattern over a moving treadmill, with the goal of retraining the person to walk after spinal cord injury or stroke. 	
	 Surgical use of Robots Advantages To patients Robotic surgery offers many benefits to patients compared to open surgery, including: Less invasive Shorter hospitalization- frees up beds Reduced pain and discomfort Faster recovery time and return to normal activities Smaller incisions, resulting in reduced risk of infection Reduced blood loss and transfusions Minimal scarring For surgeons Greater visualization Enhanced dexterity (fine movement) Greater precision Telesurgery, The surgeon does not have to be present, but can be anywhere in the world, leading to the possibility for remote surgery. Extend the surgical skills of a trained surgeon Quicker and more accurate diagnoses Robotic assistants can also decrease the fatigue that doctors experience during surgeries that can last several hours NOT robots don't get tired/ work 24/7 	
	 Disadvantages Cost effectiveness. Robots are expensive and some surgeons think traditional surgery just as effective. Fewer staff in a surgical team – nurses anaesthetists etc. A major obstacle in telesurgery has been latency the time delay between the doctor moving his or her hands to the robotic arms responding to those movements. Additional surgical training needed Problems with programming to required level of precision. During the training phase, minimally invasive operations can take up to twice as long as traditional surgery, leading to operating room tie ups and surgical staffs keeping patients under aesthesia for longer periods Expensive technology could soon become obsolete as new advances happen 	

Q.	Marking Scheme	Mark
	 Rehabilitation use of Robots Advantages Assistive robot substitutes for lost limb movements enabling mobility Patients who received extra therapy from the robot improved the rate of their arm movement recovery. Levels of assistance can be adjusted either automatically or manually according to patient's needs. Continuous monitoring of performance and biomarkers. 	
	 Disadvantages Cost of equipment. Safety Issues./ Components can fail Unforeseen objects in the way can limit progress Patient controls equipment and not under direct control of s doctor so in case of a safety issue patient may not know what to do. 	

Q.	Marking Scheme			Mark
8. (a)	Allow 1 mark for name, 1	I mark for further details and 1	mark for an advantage x3	3x3
	Service	Further details	Advantage	
	Social networking services Blogging Twitter Facebook Instagram	 Free site Have to create accounts Have to accept advertising 	Keep in touch (must be qualified) Make views known/join debates Use in job applications Cheap way to advertise own services and companies	
	Instant (direct) messaging services Whatsapp Snapchat Facetime Facebook Messenger (but not twice) iMessage Online chat Discord etc	Type of online chat that offers real-time text transmission over the Internet. A LAN messenger operates in a similar way over a local area network. Short messages are typically transmitted between two parties, when each user chooses to complete a thought and select "send". Some IM applications can use push technology to provide real-time text, which transmits messages character by character, as they are composed. More advanced instant messaging can add file transfer, clickable hyperlinks, Voice over IP, or video chat.	Allows immediate receipt of acknowledgment or reply. instant messaging includes added features which can make it even more popular. For example, users may see each other via webcams, or talk directly for free over the Internet using a microphone and headphones or loudspeakers No Cost Encrypted	
	Video Zoom Teams	videoconferencing	Allows meetings to be held more flexibly Can see who you are talking to	
	Mobile phones	 Services available: Text Messages Voice mail Alarm clock/time Reminders /to do list Change ring tone Record greeting message Display photos / pictures on screen Radio TV Some can receive the internet GPS/ locator 	Use anywhere there is a signal Can find location/ map if lost Send globally	

Marking Scheme	
Allow 1 mark for the service and disadvantage	d 1 mark for further details x4 and 1 mark for
Service	Extra
Cinema, holiday and theatre booking. Ordering food (takeaway)	Buy <i>movie</i> tickets <i>online</i> , find showtimes, <i>theatre</i> information, view trailers, read synopsis and reviews. No double booking. Less waste etc
Interactive services, dating, voting, gaming, betting	Allows the user greater chance of meeting a partner – better matching Allows more people to vote as they can do so without leaving their house
Pay to view services	Allows people to watch more football or boxing and see all the big occasions without travelling there
Government services: passports, driving licences	Allows you to renew your road tax without having to go to the post office. Makes it easier to renew a passport or driving licence and means that less time is wasted
Real time information services; satellite navigation	Real time information services are very helpful as they tell you information which you need at that time. Examples of real time information are train timetables, news services, traffic reports and the weather. The real time information service of train timetables enable you to know what time trains arrive and leave at different train stations. This is extremely useful as it allows you to prepare you journey beforehand, Makes sure you know where you are at any time, finds you the best route for a journey and allows you to adapt in light of traffic issues.
Netflix, streaming services, Amazon Prime etc	More choice, no licence fee, watch latest films
NHS Service	Can save going to the doctor by gaining health information/diagnosis online and save going to see the doctor
Online learning	No teams or zoom
Disadvantage Can be expensive / accounts can outlets / loss of jobs/retraining (if	n be hacked / fake services / can close high street qualified)