

2006 Computing

Intermediate 2

Finalised Marking Instructions

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**2006 Computing
Intermediate 2**



SECTION I Attempt ALL questions in this section		Marking guidelines
1.	Convert the decimal number 131 to a binary number.	1000011 1 mark
2.	Explain how real numbers are stored using <i>floating point representation</i> .	Mantissa (1 mark) and exponent (1 mark) if an example is given that has both mantissa and exponent eg 0.62×10^4 (1 mark) 2 marks
3.	The <i>Control Unit</i> and the <i>Arithmetic and Logic Unit</i> (ALU) are two parts of the processor. Name the other part of the processor.	<ul style="list-style-type: none"> • Registers (Do not accept memory) 1 mark
4.	Many organisations have replaced stand alone computers with networked computers.	
	(a)	Describe one economic factor that has led to the use of computer networks.
		<ul style="list-style-type: none"> • Falling cost of telecommunication technology • Shared access to expensive equipment • Geographical spread of organisations • Demand for up to date information (Only one required) 1 mark
	(b)	Describe one function of a <i>server</i> on a network.
		<ul style="list-style-type: none"> • Stores files centrally • Mail server • Print server • Access to Internet • Application server (Only one required) 1 mark

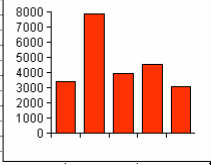
5.	The text and graphics files for a sixty-four page magazine, containing many large colour photographs, are stored on a hard disk. A copy of the files is to be posted to a commercial printing company.	
(a)	Suggest a suitable storage medium for saving the copy of the files that will be sent to the printing company.	CD-RW, CD-R, DVD-R, DVD-RW, USB pen Any one of these, 1 mark Portable hard disk drive, zip disk , jazz disks (Do not accept CD, CDRom, DVD, DVDROM) 1 mark
(b)	The text files are stored as Rich Text Format (RTF). Suggest a reason for this.	<ul style="list-style-type: none"> • Standard format – allows sharing between applications • Retains formatting information (Only one required) 1 mark
6.	A pupil uses a high level of language to write a program that stores a list of friends' names and mobile phone numbers. When the user enters a friend's name the program finds and displays the friend's mobile number.	
(a)	What is the most efficient way to store the list of friends' names?	Array 1 mark
(b)	Which one of the following standard algorithms is the program using to find the friend's details? <ul style="list-style-type: none"> • Input validation • Linear search • Counting occurrences • Find the maximum • Find the minimum 	Linear search 1 mark
7.	At what stage of the software development process is a <i>user guide</i> produced?	Documentation 1 mark
8.	A programme uses a <i>nested loop</i> to draw four rows of ten stars on the screen. What is a "nested loop"?	A loop completely inside another loop 1 mark

9.	A programme written in a high level language must be translated.		
	(a)	Explain why a <i>translator</i> is needed.	<ul style="list-style-type: none"> To convert high level language into machine code OR So that the computer can understand it <p>1 mark for either one</p>
	(b)	Describe how an <i>interpreter</i> operates.	<ul style="list-style-type: none"> Changes one line to machine code and then executes it before moving on to the next line OR It decodes and executes a line at a time <p>1 mark for either</p>
10.	Suggest one way of improving the <i>readability</i> of a program.		<ul style="list-style-type: none"> Use meaningful variable names Comment lines Using modules <p>Only one required</p> <p>1 mark</p>

[END OF SECTION I]

		SECTION II Attempt ALL questions in this section	Marking guidelines
11.	Ms Alexander develops a program that will take in the radius of a circle, calculate the area of the circle and display the area of the circle. The radius must be at least 1 cm and not more than 100 cm. The main steps of the solution are shown below. Step 3 has been left blank.		
	1. Take in radius 2. Calculate area of circle 3.		
	(a)	What is the name of the design notation used above?	Pseudocode 1 mark
	(b)	Step 3 in the design has been left blank. What should Step 3 of the solution be?	Display area of circle 1 mark
	(c)	The algorithm below is used to refine step 1. 1.1 get number from keyboard 1.2 Do while number <1 OR number> 100 1.3 display error message 1.4 get number from keyboard 1.5 end loop	
	(i)	Describe the purpose of the algorithm shown above.	Input validation Check number is between 1 and 100 Any one for 1 mark
	(ii)	Steps 1.2 and 1.5 in the algorithm represent a loop. What type of loop do they represent?	Conditional loop (do not accept examples) 1 mark
	(d)	To calculate the area of a circle, Step 2 is refined as: 2.1 area = 3.14 multiplied by radius squared	
	(i)	Using a high level language with which you are familiar, write one line of program code that will calculate the area of the circle.	area = 3.14* radius ² (2 marks) OR area = 3.14* radius*radius (2 marks) All correct – 2 marks, 1 mistake – 1 mark, >1 mistake – 0 marks
	(ii)	Some software development environments have a <i>pre-defined function</i> to calculate the area of a circle. What is a “pre-defined function”?	Built-in calculations A calculation the software already knows how to carry out Any 1 for 1 mark

	(e)	Ms Alexander tests her finished program using 5 and 27 as examples of <i>normal</i> data for the radius. Suggest two numbers Ms Alexander should use for <i>extreme</i> data.	1 1 mark 100 1 mark 2 marks
	(f)	Ms Alexander must evaluate her program in terms of <i>fitness for purpose</i> . What does the term fit for purpose mean?	<ul style="list-style-type: none"> • Meets the requirements specification • Does the job that it was intended to Any 1 for 1 mark
12.	<p>Jakub is a businessman who is thinking of buying a computer system for general office work. He has seen the advert shown below.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;">  <div style="display: inline-block; vertical-align: top; margin-left: 20px;"> <p>Standard Features</p> <p>2.8 Gigahertz processor 1 Gigabyte RAM 2 Megabyte ROM 80 Gigabyte hard drive CD-ROM drive 17 inch monitor 300 dpi Colour inkjet printer</p> </div> <div style="display: inline-block; vertical-align: top; margin-left: 20px;">  <p>Optional upgrades</p> <p>CD-RW drive 1200 dpi Laser printer</p> </div> </div>		
	(a)	What is the clock speed of the above computer?	2.8 Gigahertz (essential that units are included) 1 mark
	(b)	Main memory is made up of both RAM and ROM.	
	(i)	Describe one difference between RAM and ROM.	Can only read from ROM but can read and write to RAM RAM is volatile, ROM is non-volatile (Explanation must contain both RAM and ROM parts) Any 1 for 1 mark
	(ii)	Calculate the total amount of main memory in megabytes for the above computer system. Show all working.	1 mark for identifying quantities of RAM and ROM 1 mark for converting 1 GB into megabytes eg 1024 (1 mark) + 2 (1 mark) = 1026 megabytes 2 marks

	(c)	The advert says that the computer can be upgraded to include a CD-RW drive and laser printer.																																																																																												
	(i)	Describe one difference between a CD-R and a CD-RW.	A CD-RW can be overwritten whereas a CD-R cannot (Explanation must contain both CD-R and CD-RW parts) 1 mark																																																																																											
	(ii)	Jakub will be printing off a large number of leaflets advertising his company. Describe two benefits that Jakub would gain by upgrading to the laser printer.	Laser printer has a better quality printout than the inkjet Laser printer will print faster than the inkjet Running costs of Laser printer will be cheaper 1 mark each, to max 2 marks																																																																																											
	(d)	The computer has both operating system software and applications software																																																																																												
	(i)	What is the purpose of operating system software?	To control the running of the computer system 1 mark																																																																																											
	(ii)	The diagram below shows an application program. <table border="1"> <thead> <tr> <th></th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>E</th> <th>F</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>City</td> <td>Leaflets</td> <td>Orders</td> <td></td> <td></td> <td></td> </tr> <tr> <td>2</td> <td>Aberdeen</td> <td>3380</td> <td>50</td> <td></td> <td></td> <td></td> </tr> <tr> <td>3</td> <td>Dundee</td> <td>7839</td> <td>45</td> <td></td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>Glasgow</td> <td>3924</td> <td>76</td> <td></td> <td></td> <td></td> </tr> <tr> <td>5</td> <td>Stirling</td> <td>4516</td> <td>60</td> <td></td> <td></td> <td></td> </tr> <tr> <td>6</td> <td>Edinburgh</td> <td>3035</td> <td>74</td> <td></td> <td></td> <td></td> </tr> <tr> <td>7</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>8</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>9</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>10</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>11</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>12</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>  <p>Identify one data object and one operation that may have been carried out on that object.</p>		A	B	C	D	E	F	1	City	Leaflets	Orders				2	Aberdeen	3380	50				3	Dundee	7839	45				4	Glasgow	3924	76				5	Stirling	4516	60				6	Edinburgh	3035	74				7							8							9							10							11							12							Objects – cell, row, column, chart, text, numbers Operations – text made bold, numbers centred, chart drawn, chart filled, column resized....others 1 mark for any 1 object and 1 mark for corresponding operation.
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	(iii)	The chart was created using a <i>macro</i> . Describe how the user could record a “macro”.	Start recording – carry out all actions – stop recording All 3 present – 2 marks 2 present – 1 mark <2 present – 0 marks																																																																																											

13.	Ramjet Enterprises are using a high level language to write a browser program which includes e-mail facilities.		
	(a)	Give one reason why they have decided to write the program in a high level language rather than machine code.	<ul style="list-style-type: none"> • Easier to correct mistakes • Uses English like words • Portability <p>Any 1 for 1 mark</p>
	(b)	The browser program displays <i>search engine</i> web pages. What is a “search engine”?	Where a word is entered and a list of results are listed. 1 mark
	(c)	The e-mail part of the program allows the user to store a person’s nickname, for example, George23. what sort of variable would they use to store a person’s nickname?	String 1 mark
	(d)	Before selling the program, Ramjet sends it out to 100 customers to see if it works as expected. The customers will reply by e-mail.	
		(i)	Which stage of the software development cycle is being carried out? 1 mark
		(ii)	Suggest one way that all the replies could be collected together in the e-mail software. Create a folder that all the replies could be placed in. Apply rule to put responses in folder. Any 1 for 1 mark
		(iii)	One customer’s reply contained a virus. Describe two effects the virus could have upon the computer system. <ul style="list-style-type: none"> • Displaying unwanted messages • Unusual sound effects • Computers rebooting unexpectedly • Unwanted generation of e-mails Others 1 mark each, to max 2 marks
		(iv)	If a customer deliberately tried to spread a virus by e-mail, which law would they have been breaking? Computer Misuse Act 1 mark

[END OF SECTION II]

		SECTION III Part A – ARTIFICIAL INTELLIGENCE Attempt ALL questions in this section	Marking guidelines
14	Many electronic devices and programs on sale today are described as intelligent. Expert systems show their intelligence by storing knowledge and using facts and rule to give advice.		
	(a)	Describe two abilities which people have that demonstrate human intelligence.	<ul style="list-style-type: none"> • Recognise people • Have a conversation • Solve problems • Memorise and recall information • Any other reasonable answer <p>Any two, 1 mark each</p> <p>2 marks</p>
	(b)	The <i>Turing Test</i> can be used to decide if a computer program is intelligent. Describe the “Turing Test”.	<ul style="list-style-type: none"> • A person at a computer communicates with a hidden responder. 1 mark • A computer is said to be intelligent if it can fool the person into thinking they are communicating with a person. 1 mark <p>2 marks</p>
	(c)	A printer manufacturer supplies an expert system on CD-ROM with each printer it sells. Customers can solve technical problems with their printer by using the expert system instead of telephoning customer support.	
	(i)	Give one advantage to the customer of using the expert system rather than the telephone support help line.	<ul style="list-style-type: none"> • Saves money on phone bills • Help always available • Better knowledge <p>1 mark</p>
	(ii)	Give one advantage to the printer manufacturer of using the expert system rather than the telephone support help line.	<ul style="list-style-type: none"> • Fewer staff need to be employed • Lower wage bill <p>1 mark</p>

	(d)	The development of language processing has led to <i>chatbots</i>	
	(i)	Name an early example of language processing.	<ul style="list-style-type: none"> • Eliza • Parry • SHRDLU <p>1 mark for either one</p>
	(ii)	Explain why faster processors have led to more effective language processing.	<ul style="list-style-type: none"> • Less time taken to process the sentence and form a reply • Faster to search a dictionary • Can use a larger dictionary <p>1 mark for any one</p>
	(e)	Future mobile phones may not have a keypad, only an on-off button. Suggest an artificial intelligence application that will allow the user to enter a phone number.	<p>Voice (speech) recognition NLU (Natural Language Understanding) NLP (Natural Language Processing)</p> <p>1 mark</p>
15		<p>Highland Hideaways is a company that rents out holiday cottages. All the cottages are named after mountains. The knowledge base below shows facts about cottages and rules for recommending suitable accommodation.</p> <p>1 has (cairngorm,playarea). 2 has (lomond,garden). 3 has (nevis,play area).</p> <p>4 available (cairngorm,july). 5 available (lomond,july). 6 available (lomond,august). 7 available (nevis,september).</p> <p>8 price (cairngorm,300). 9 price (lomond,200). 10 price (nevis,500).</p> <p>11 cheap_holiday(X) if price(X,Y) and Y<250.</p>	
	(a)	What would be the result of the following query? <code>?has(cairngorm,garden).</code>	<p>No False</p> <p>1 mark</p>
	(b)	What will be the first solution to the following query? <code>?available(Lomond,X).</code>	<p>July</p> <p>1 mark</p>

	(c)	<p>Below is the start of a trace showing how the system evaluates the query.</p> <p style="text-align: center;">?cheap_holiday(X)</p> <hr/> <p>cheap_holiday(X) matches at 11 Subgoal price(X,Y) matches at 8 X=cairngorm, Y=300 Subgoal Y<250 fails</p> <hr/> <p>Using the numbering system to help you, complete this trace.</p>	<p>Matches at 9 X=lomond, Y=200 1 mark Subgoal Y<250 succeeds 1 mark <i>(accept 200<250)</i> Solution X=lomond</p> <hr/> <p>Matches at 10 X=nevis, Y=500 1 mark Y<250 Fails 1 mark <i>accept 500<250</i></p> <hr/> <p>4 marks</p>
	(d)	<p>Cottages that are available in July and have play areas are said to be suitable for families and are described as “family choice”.</p> <p>Use this information to complete the following rule: family_choice(X)</p>	<p>family_choice(X) if available (X, july) and has (X, playarea).</p> <p><i>Or</i></p> <p>family_choice(X):- available(X, july), has(X, playarea).</p> <p>2 marks for completely correct deduct 1 mark for one error</p>
	(e)	<p>The search of the holiday cottage knowledge base is carried out by each time expanding the left hand node of the <i>search tree</i>, until a solution is found. What search method is being used?</p>	<p>Depth first</p> <p>1 mark</p>
	(f)	<p>A year later Highland Hideaway buys more cottages to rent and increases the prices of the existing cottages. The knowledge base is updated to include this information. What stage of the software development process is being carried out?</p>	<p>Maintenance</p> <p>1 mark</p>

16.	Malcolm is an estate agent. He visits properties for sale and enters details of the property in his palmtop. He then uses <i>artificial neural network</i> software to predict a selling price for the property.		
	(a)	(i) What is a “neural network”?	<ul style="list-style-type: none"> • Electronic model of the brain 1 mark <ul style="list-style-type: none"> • Consisting of many interconnected simple processors 1 mark 2 marks
		(ii) Suggest one disadvantage of using a “neural network” for this purpose.	<ul style="list-style-type: none"> • It may not take into account all the local circumstances that can affect house prices • Concept of out of date • Can’t explain its reasoning 1 mark for any one
		(iii) Malcolm’s palmtop has a touch sensitive screen with stylus and no keyboard. Suggest a suitable method of data entry.	Hand writing recognition. 1 mark
	(b)	One of Malcolm’s clients is selling a factory building. As part of a safety survey, <i>intelligent robots</i> are used to inspect underground water and gas pipes. Describe how an “intelligent robot” would cope with an obstacle in its path.	<ul style="list-style-type: none"> • Uses sensors to detect obstacle • Acts on information to navigate round it 1 mark each 2 marks

[END OF SECTION II – PART A – ARTIFICIAL INTELLIGENCE]

SECTION III Part B – COMPUTER NETWORKING Attempt ALL questions in the Networking section		Marking guidelines
17.	Dr Young works at the Bewell Health Centre. The Health Centre has a <i>wireless local area network</i> (WLAN).	
	(a) Give one advantage for the Health Centre of a WLAN compared to a LAN connected by cables.	<ul style="list-style-type: none"> • More flexible – computers can be placed anywhere • No trailing cables • Cheaper and easier to install/set-up <p>1 mark for any one</p>
	(b) Dr Young has a laptop computer. Name one item of hardware that must be installed inside the laptop so that it can connect to the WLAN.	Wireless network interface card, wireless NIC 1 mark
	(c) The staff in the Health Centre book appointments for patients at the local hospital. A <i>leased line</i> connects the Health Centre and the hospital.	
	(i) Give one advantage of a “leased line” for transmitting data.	<ul style="list-style-type: none"> • Confidential data • Always connected • Secure transmission of data • Full bandwidth • Not shared <p>1 mark</p>
	(ii) Suggest one software method of keeping data secure.	<ul style="list-style-type: none"> • Log in with user name and password • Encryption • Anti-virus • Firewall <p>1 mark</p>
	(iii) Apart from transmitting data to the hospital, suggest one other use of the “leased line”.	<ul style="list-style-type: none"> • Voice – spoken phone calls <p>1 mark</p>
	(d) Dr Young accesses the World Wide Web for research purposes Describe how he would use a search engine to find out about a drug used in America to treat hay fever.	<ul style="list-style-type: none"> • Enter keywords eg America, hay fever, drug (1 mark) • Search engine will list web pages with these keywords (1 mark) <p>2 marks</p>

	<p>(e) Dr Young sends the following e-mail with a picture of a skin disease to a colleague called Dr Michelle King.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>From: drkenyoung@bewell.nhs.uk To: drmichelleking@forth.ac.uk Subject: Photo of skin disease</p> <p>Attached is a photo showing the current skin problem of patient X.</p> <p>Attached: skinX1.jpg</p> </div>	
	<p>(i) Name an input device that could have been used to capture the image.</p>	<ul style="list-style-type: none"> • Digital camera/video camera • Webcam • Scanner <p>1 mark</p>
	<p>(ii) By looking at Dr King’s e-mail address suggest the type of organisation for which she works.</p>	<ul style="list-style-type: none"> • University, college, teaching hospital, school, academic <p>1 mark</p>
	<p>(f) Explain what is meant by <i>unicast</i> transmission.</p>	<ul style="list-style-type: none"> • Data sent by one computer to one other computer <p>1 mark</p>

18.	Jamal uses the Internet to buy tickets on-line for musical events. Jamal enters the following URL http://www.gigs-on-line.co.uk		
	(a)	Which Internet service is Jamal using?	<ul style="list-style-type: none"> World Wide Web 1 mark
	(b)	Once Jamal enters the URL, the Domain Name Service (DNS) carries out <i>domain name resolution</i> . Describe what happens during “domain name resolution”.	<ul style="list-style-type: none"> Takes URL entered by the user and searches database 1 mark To find IP address 1 mark 2 marks
	(c)	The gigs-on-line website uses <i>data encryption</i> .	
		(i) Suggest one reason why they use “data encryption”.	<ul style="list-style-type: none"> To keep transmitted data confidential 1 mark
		(ii) The police are investigating ticket sales fraud. They ask to see all encrypted data. Which law allows access to data which has been encrypted?	Regulation of Investigatory Powers Act 2000 (RIPA) 1 mark
	(d)	Jamal enjoys viewing live videos of concerts on the Internet. Suggest, with a reason, the most suitable type of Internet connection for this purpose.	<ul style="list-style-type: none"> Broadband or ADSL or Cable modem 1 mark for any one High data transfer rates 1 mark Large bandwidth 2 marks




19.	Derek is responsible for managing the local area network at Hilltop High School.		
	(a)	Give one example of a possible physical disaster that could cause the network to fail.	Power cut, fire, flood Any reasonable answer 1 mark
	(b)	It is important that data is not lost if the network does fail. Outline an effective backup strategy that will allow the school to recover quickly from data loss.	<ul style="list-style-type: none"> • Keeping three backup versions – grandfather, father and son • Regular backups • Keeping backups in a different location Any two 1 mark each 2 marks
	(c)	Derek has decided that the school should change its Internet Service Provider (ISP) to an ISP that offers a free <i>filtering</i> service.	
	(i)	Explain why it is necessary for the school to use a “filtering” service.	<ul style="list-style-type: none"> • To block inappropriate sites 1 mark
	(ii)	After the filtering software has been in use for a few weeks, Derek decides that the filtering software is not <i>fit for purpose</i> . Suggest one reason for the software not being (‘fit for purpose’).	Pupils are able to access sites with inappropriate content 1 mark
	(iii)	Apart from a “filtering service”, suggest one other service that an ISP normally provides.	<ul style="list-style-type: none"> • Provides e-mail address • Provides web space • Anti-virus 1 mark only one required
	(d)	The school has a digital satellite television which features <i>convergent technology</i> . The digital satellite is also connected to the telephone network. Suggest two ways that this digital television could allow the pupils to become more interactively involved in what they are watching.	<ul style="list-style-type: none"> • E-mail the programme • Video on demand/download films • Voting 1 mark for any one, two required 2 marks

[END OF SECTION III – PART B – COMPUTER NETWORKING]

SECTION III – MULTIMEDIA TECHNOLOGY Attempt ALL questions in the Multimedia Technology section.		Marking guidelines
20.	Hamid has been on holiday and taken lots of photographs with his digital camera. He now wishes to create a presentation of his photos to show to his friends.	
(a)	While he was on holiday, Hamid took 36 photographs that filled up the memory card so that it could hold no more photographs.	
(i)	What could Hamid have done before he took the photographs, that would have allowed him to store more than 36 photographs on the same memory card?	<ul style="list-style-type: none"> Reduce the resolution Reduce the colour depth 1 mark
(ii)	After he had filled the card, what could he do that would allow him to take more photographs without losing the ones he had already taken?	<ul style="list-style-type: none"> Download the pictures and then wipe the memory card Remove the memory card and replace it with another Use cameras built-in memory Any 1 for 1 mark
(b)	Hamid has imported the pictures into his image-editing program to edit the pictures before he puts them into his presentation.	
(i)	Three of the pictures are very dark and difficult to see. What feature of the image-editing software should Hamid use to improve the pictures?	Ability to alter brightness and contrast (accept just brightness or contrast) 1 mark
(ii)	When the pictures were edited, he had to save the pictures as either GIF or JPEG. Describe two differences between GIF and JPEG file.	<ul style="list-style-type: none"> GIF takes less memory than JPEG GIF 8-bit colour and uses lossless compression JPEG 24-bit colour and uses lossy compression 1 mark each to max 2 marks
(c)	Hamid has a choice of using a <i>WYSIWYG editor</i> to create a web page or a presentation package to create a presentation.	
(i)	What does WYSIWYG stand for?	What you see is what you get 1 mark
(ii)	What software is needed to view a multimedia web page?	Browser 1 mark

	(d)	Hamid's friends are very impressed and want to take a copy of the presentation home with them.	
	(i)	The presentation takes up to 200 megabytes of disk space. Give two reasons why the friends would prefer to have zip disks rather than floppy disks.	<ul style="list-style-type: none"> • Would take 1 zip disk but a large number of floppy disks • Zip has a faster data transfer rate than floppy • Zip is more robust than floppy (Do not accept that Zip is cheaper than floppy) <p>1 mark each to max 2 marks</p>
	(ii)	When one of his friends tried the copy at home he was unable to run the presentation. Suggest one reason why he was unable to run the presentation.	<ul style="list-style-type: none"> • Didn't have the application or the player for that software • Different OS • Not enough RAM • Incompatible hardware <p>1 mark</p>
21.		Jennifer wishes to send a video message to her relatives in Australia. She records the video then transfers it to the computer to be edited.	
	(a)	In the video editing software, Jennifer reduces the <i>colour depth</i> and <i>video time</i> .	
	(i)	What is meant by the term "colour depth"?	Number of bits used to store a colour (or a pixel) 1 mark
	(ii)	What feature of the video editing software would Jennifer use to reduce the "video time"?	Cropping Trimming Any 1 for 1 mark
	(iii)	What effect would reducing the "video time" have upon the video quality?	No effect 1 mark

	(b)	Jennifer records all the music that she wants to include with the video. Unfortunately, the sound file is too large. To reduce the file size she uses <i>lossy compression</i> .	
		(i)	Explain what is meant by the term “lossy compression”.
			Information has been removed from the sound file 1 mark
		(ii)	Which sound file type uses “lossy compression”?
			MP3 Also accept MP4, ADPCM: (.adpcm), WMA (.wma), MPC, Vorbis, Atrac, AC-3 Any 1 for 1 mark
		(iii)	Apart from compression, describe one other way the sound file size could have been reduced.
			<ul style="list-style-type: none"> • Reducing the sampling frequency (rate) • Reducing the sampling depth • Reducing the sound time Any 1 for 1 mark
	(c)	While watching the completed video, Jennifer thinks it is very jerky.	
		(i)	What step of the software development process is being carried out?
			Evaluation 1 mark
		(ii)	Suggest one reason why the video appears jerky.
			<ul style="list-style-type: none"> • The frame rate has been reduced too much • No video playback card • Processor is too slow Any 1 for 1 mark

22.	Ezotech is hoping to bring <i>virtual reality</i> to the home games market with their Ezotech headset.		
(a)	Describe two features of multimedia that will have converged in the Ezotech headset.	<p>Audio and 3D graphics</p> <p>1 mark each</p> <p>2 marks</p>	
(b)	<p>Shown below are two objects from the game.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Object 1</p> </div> <div style="text-align: center;">  <p>Object 2</p> </div> </div>		
(i)	Which two attributes have been altered between Object 1 and Object 2.	<p>Texture and rotation</p> <p>1 mark each (2 marks)</p>	
(ii)	What common file type is likely to have been used to store the graphics for display on the Ezotech headset?	<p>VRML wrl</p> <p>Any 1 for 1 mark</p>	
(c)	The music for their games is created on a MIDI keyboard. The <i>instrument</i> is one attribute of a MIDI instruction. Name two other attributes of a MIDI instruction.	<p>Pitch, volume, duration, tempo</p> <p>1 mark each to max 2 marks.</p>	

[END OF SECTION III – PART C – MULTIMEDIA TECHNOLOGY]

[END OF MARKING INSTRUCTIONS]