

2005 Computing

Intermediate 2 – New Arrangements

Finalised Marking Instructions

These Marking Instructions have been prepared by Examination Teams for use by SQA Appointed Markers when marking External Course Assessments.

**2005 Computing
Intermediate 2**

SECTION I Attempt ALL questions in this section		Marking guidelines										
1.	The <i>control unit</i> is one part of the processor. Name the other two parts of the processor	<ul style="list-style-type: none"> • Arithmetic & Logic Unit (accept ALU) • Registers Do not accept memory or RAM/ROM 1 mark each, 2 marks max										
2.	Data is stored in memory using bits. What is the largest positive number that can be stored using 7 bits?	<ul style="list-style-type: none"> • 127 or 2^7-1 (2 marks) • 128 or 2^7 (1 mark) • 1111111 (1 mark) 2 marks										
3.	Describe two benefits of networking computers rather than having stand-alone computers.	<ul style="list-style-type: none"> • Share files • Share expensive peripherals eg printer • Faster communications eg e-mail 1 mark each, 2 marks max										
4.	Mr Williams uses a computer program to record the absences in his class. He types an X beside the name of each absent pupil. At the bottom of the class list, the program shows the total number of pupils absent. <div style="border: 1px solid black; padding: 10px; margin: 10px 0; width: fit-content;"> <p style="text-align: center;">Class 3C2</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Emily Brown</td> <td style="text-align: right; padding: 2px;">X</td> </tr> <tr> <td style="padding: 2px;">Jorg Chan-Lau</td> <td></td> </tr> <tr> <td style="padding: 2px;">Mohammad Hansrod</td> <td style="text-align: right; padding: 2px;">X</td> </tr> <tr> <td style="padding: 2px;">Joseph Kelly</td> <td></td> </tr> <tr> <td colspan="2" style="text-align: right; padding: 2px;">Absent = 2</td> </tr> </table> </div> Which one of the following standard algorithms would the program have to use? <ul style="list-style-type: none"> • Find minimum • Count occurrences • Input validation • Find maximum • Linear search 	Emily Brown	X	Jorg Chan-Lau		Mohammad Hansrod	X	Joseph Kelly		Absent = 2		<ul style="list-style-type: none"> • Count occurrences 1 mark
Emily Brown	X											
Jorg Chan-Lau												
Mohammad Hansrod	X											
Joseph Kelly												
Absent = 2												
5.	INT and RND are built-in calculations within most High Level Languages. What is the correct term for built-in calculations?	<ul style="list-style-type: none"> • Pre-defined functions 1 mark										
6.	Computer software normally comes with a <i>technical guide</i> and a <i>user guide</i> . Suggest two contents you would expect to find in a “user guide”.	<ul style="list-style-type: none"> • Instructions how to use the basic functions of the software • Tutorial Guide (Accept Installation Guide) 1 mark each, max 2 marks										


7.	<p>A conditional statement had been designed in pseudocode. It should display the word “teenager” if an age is between 13 and 19 inclusive. The conditional statement is shown below: IF age >= 13 OR age <= 19 THEN show the word “teenager” When the age 75 is entered the word “teenager” is displayed. What mistake has been made in the pseudocode?</p>	<ul style="list-style-type: none"> • The OR should be AND <p>1 mark</p>
8.	<p>Describe the purpose of a <i>string variable</i> in a computer program.</p>	<ul style="list-style-type: none"> • Storage of a text data <p>1 mark</p>
9.	<p>Describe one use of a <i>text editor</i> during the software development process.</p>	<ul style="list-style-type: none"> • Enter the program code • Edit program code • Create user guide or technical guide <p>1 mark for any one</p>
10.	<p>Computer viruses have become more common over the last 10 years. Describe two ways in which computer viruses may be spread.</p>	<ul style="list-style-type: none"> • Floppy disk • Homemade CDs • ‘Fun’ websites • E-mail attachments • Swappable storage devices <p>1 mark each, 2 marks max</p>

[END OF SECTION I]

SECTION II		Marking guidelines
Attempt ALL questions in this section		
11.	<p>Mr Richardson is writing a quiz program for his pupils. A choice of answer is given and the user must type the letter (A, B, C or D).</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Question: What is the capital of France?</p> <p>A Madrid B Paris C Oslo D Calais</p> <p>Enter your answer (A, B, C or D): B</p> </div>	
(a)	<p>To make sure that only A, B, C or D is accepted, Mr Richardson includes the following algorithm in the design for his program.</p> <pre> 1 get answer from keyboard 2 Do while answer < A OR answer > D 3 display error message 4 get answer from keyboard 5 end loop </pre>	
	(i) Which standard algorithm is Mr Richardson using?	<ul style="list-style-type: none"> • Input validation <p>1 mark</p>
	(ii) Explain why this algorithm uses a <i>conditional loop</i> rather than a <i>fixed loop</i> .	<ul style="list-style-type: none"> • The loop might not need to be carried out if valid data is entered • You do not know how many times the loop needs to be executed <p>1 mark</p>
(b)	Mr Richardson codes the algorithm and then tests it.	
	(i) Suggest one example of <i>normal</i> test data for this algorithm.	<ul style="list-style-type: none"> • Any one of A, B, C or D <p>1 mark</p>
	(ii) Suggest one example of <i>exceptional</i> test data for this algorithm.	<ul style="list-style-type: none"> • Anything apart from A, B, C or D <p>1 mark</p>

	(c)	Mr Richardson writes his program using a high level language. High level languages can be translated into machine code by an <i>interpreter</i> or a <i>compiler</i> .	
	(i)	Suggest one reason why Mr Richardson writes his program in a high level language rather than machine code.	<ul style="list-style-type: none"> • Uses English words • Easier to understand • Easier to edit • Easier to find errors <p>1 mark (any one)</p>
	(ii)	Describe how a compiler translates programs written in a high level language into machine code.	<ul style="list-style-type: none"> • Compiler changes whole program to machine code in one go <p>1 mark</p>
	(iii)	While he is developing his program, Mr Richardson uses an <i>interpreter</i> . Give one advantage of using an interpreter rather than a compiler.	<ul style="list-style-type: none"> • It gives error messages as it goes along • Easier to edit mistakes <p>1 mark (any one)</p>
	(d)	Once the pupils have used the program, Mr Richardson decides that the <i>user interface</i> could be improved. He wants the user to select the answer from a list, as shown below:	
		<div style="border: 1px solid black; padding: 5px;"> <p>Question: What is the capital of France?</p> <p style="text-align: center;"> <input type="radio"/> Madrid <input checked="" type="radio"/> Paris <input type="radio"/> Oslo <input type="radio"/> Calais </p> </div>	
	(i)	Which stage of the software development process is Mr Richardson carrying out when he decides that he needs to improve the user interface?	<ul style="list-style-type: none"> • Evaluation, or maintenance <p>1 mark for either</p>
	(ii)	Mr Richardson draws a plan on paper for the new interface. Which stage of the software development process is being revisited?	<ul style="list-style-type: none"> • Design stage <p>1 mark</p>

		(iii) Mr Richardson's pupils use laptop computers. Suggest one built-in input device that may be used to select answers.	<ul style="list-style-type: none"> • Trackball, touchpad 1 mark

12.	<p>Fellside High School has produced a magazine to mark its anniversary. The magazine cover is shown below.</p> <div style="border: 1px solid black; padding: 10px; text-align: center;"> <p>Fellside High School</p> <p>1905 – 2005</p> <p>Anniversary Magazine</p>  <p>£3.50</p> </div>	
	<p>(a) Identify one object on the cover and suggest one operation that has been carried out on it.</p>	<ul style="list-style-type: none"> • Title text – centred, font, size • Star – copied, enlarged, reduced, re-sized • Anniversary magazine – style, font, bold, size, centred • £3.50 – right aligned <p>1 mark (for any one)</p>
	<p>(b) The articles for the magazine were saved in a standard file format.</p>	
	<p>(i) Suggest one standard file format suitable for text files.</p>	<ul style="list-style-type: none"> • ASCII, RTF (Do not accept .doc, .cwk) <p>1 mark</p>
	<p>(ii) Explain the advantage of saving the files in a standard format.</p>	<ul style="list-style-type: none"> • Files are compatible with many packages <p>1 mark</p>
	<p>(c) Six pupils sell the magazines at £3.50 each. Janice writes a program that can be used to calculate the money raised. The design for the program is:</p> <ol style="list-style-type: none"> 1 set total to 0 2 loop from 1 to 6 3 ask pupil for the number of magazines sold 4 add number of magazines sold to the total 5 end loop 6 calculate money raised (multiply total by 3.50) 7 display total and money raised 	
	<p>(i) What design notation has been used above?</p>	<ul style="list-style-type: none"> • Pseudocode <p>1 mark</p>

		<p>(ii) In the design shown above, steps 2 and 5 represent the beginning and end of a loop. Name a high level language with which you are familiar, and use this language to write the code for steps 2 and 5.</p>	<ul style="list-style-type: none"> • 1 mark for opening structure of fixed loop • 1 mark for closing structure of fixed loop • eg Visual Basic For counter = 1 to 6 Next counter <p>Note: 0 marks for naming language 2 marks</p>
		<p>(iii) Janice implements her design by writing code. Suggest two ways that Janice can make the code <i>readable</i>.</p>	<ul style="list-style-type: none"> • Meaningful variable names • Comment lines • Modularity • Indented/Formulated <p>1 mark each, 2 marks</p>
		<p>(iv) Janice could have calculated the money raised using a spreadsheet. Describe one advantage of using a spreadsheet for this task.</p>	<ul style="list-style-type: none"> • Built in function for totalling numbers • No need to learn a programming language • Could do a chart of the sales • Quicker than writing code (Do not accept quicker on its own.) <p>1 mark (any one valid advantage)</p>
		<p>(d) Many former pupils contact the school by e-mail requesting information on events planned for the anniversary year. What feature of e-mail would you recommend to the school so that it can send these former pupils regular information on forthcoming events?</p>	<ul style="list-style-type: none"> • Address books • Mailing lists/groups <p>1 mark</p>

13.	<p>Michelle owns two new computer systems. The specifications for the two systems are shown below:</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> <p style="text-align: center;">SYSTEM A</p> <p>144 MHz processor 16 Mb RAM 8 Mb ROM 3 inch screen (resolution 320 x 320)</p> </div> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center;">SYSTEM B</p> <p>2.4 GHz processor 512 Mb RAM 40 GB Hard drive DVD-RW drive 15 inch screen (resolution 1400 x 1050)</p> </div>	
(a)	Which system described above is a palmtop? Give one reason for your answer.	<p>System A and one from below:</p> <ul style="list-style-type: none"> • Slow processor speed • Small RAM • Small screen size <p>1 mark for system A plus one correct reason 0 marks otherwise</p>
(b)	System B has a DVD-RW drive. Suggest one reason for storing a file on a DVD, rather than the hard drive.	<ul style="list-style-type: none"> • Large files – frees up storage space on hard drive • Portability <p>1 mark</p>
(c)	System A has a screen <i>resolution</i> of 320 x 320.	
(i)	Explain what is meant by the term “resolution”.	<ul style="list-style-type: none"> • Number of pixels 1 mark • In a fixed area 1 mark • or on screen • Number of dots per inch 2 marks • Dots per inch 1 mark <p>2 marks</p>
(ii)	A black and white image filling the screen is displayed on system A. Calculate the storage requirements of the image in kilobytes. Show all working.	<ul style="list-style-type: none"> • $320 \times 320 / 8 = 1$ mark • $/1024 = 1$ mark (0 marks for / by 1000) • 12.5 Kb <p>2 marks</p>

	(d)	Suggest one use for ROM on system A.	<ul style="list-style-type: none"> • To store application software • The operating system • Boot strap loader <p>1 mark (any one)</p>
	(e)	System B can be connected to a printer through an <i>interface</i> .	
	(i)	State two functions of an “interface”.	<ul style="list-style-type: none"> • To compensate for speed differences • To temporarily store data (buffer) • To convert data • Voltage conversion <p>(1 mark each, 2 marks max)</p>
	(ii)	Which type of printer would you recommend for quickly producing fifty high quality copies of a document?	<ul style="list-style-type: none"> • Laser <p>1 mark</p>

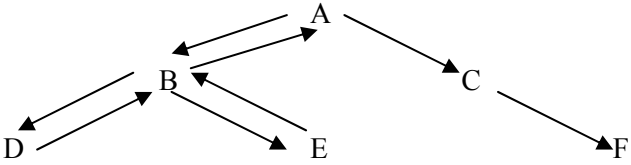
[END OF SECTION II]

	SECTION III Part A – Artificial Intelligence Attempt ALL questions in Artificial Intelligence section	Marking guidelines
14.	Alan Turing was a computer scientist who helped crack enemy codes during World War II. Today, computers and applications of artificial intelligence are a vital part of military operations. Many computer games have a military theme.	
	(a) The <i>Turing Test</i> is used to judge the intelligence of a computer system. Describe how the <i>Turing Test</i> operates.	<ul style="list-style-type: none"> • User communicates with an unseen responder. 1 mark • If he cannot tell if it is a computer or a person, it is said to be intelligent 1 mark 2 marks
	(b) State two developments in computer hardware that have allowed artificial intelligence applications to become more widely used.	<ul style="list-style-type: none"> • Faster processors • Larger memory • Larger storage capacity 1 mark each, any two (2 marks max)
	(c) The military uses artificial intelligence to study aerial photographs and identify objects. What area of artificial intelligence is being used for this task?	<ul style="list-style-type: none"> • Computer vision • Vision system • Object recognition 1 mark
	(d) Bomb disposal can be carried out by <i>intelligent robots</i> .	
	(i) Suggest one sensor that would be used by the robots.	<ul style="list-style-type: none"> • Camera, metal detector, microphone (any sensible sensor) 1 mark
	(ii) Give two reasons for using “intelligent robots” for this task.	<ul style="list-style-type: none"> • Dangerous for people • Uses info from sensors • Accuracy • Can navigate round objects 2 marks, 1 mark each, any two (2 marks max)

	(e)	Early computer games from the 1950s were very simple compared to today's complex games.	
	(i)	State one early computer game that demonstrates artificial intelligence.	<ul style="list-style-type: none"> • Noughts and crosses • Tic tac toe • Chess • Draughts <p>1 mark for any one</p>
	(ii)	Give one way in which artificial intelligence has helped to improve computer games.	<ul style="list-style-type: none"> • Computer varies its response according to user's actions • different levels <p>1 mark (any one)</p>

15.	Techno Travel is a holiday company which has an expert system on its website to help customers find the best route and price for journeys between cities.	
(a)	Give two advantages to the company of using an expert system, rather than a telephone help-line for this task.	<ul style="list-style-type: none"> • Reduced wage bill • Expertise available 24/7 • Less chance of error • Too large a volume of data for a human to store and process <p>1 mark each, 2 marks max</p>
(b)	Malcolm obtains information from Techno Travel’s website much faster at work than from his home computer. Sometimes he downloads files onto a CD-R that he takes home to load into his own computer.	
(i)	Suggest one reason why Malcolm can access the website faster at work than at home.	<ul style="list-style-type: none"> • Work has a broadband connection <p>1 mark</p>
(ii)	What precaution should Malcolm take before opening the files from the CD-R on his home computer?	<ul style="list-style-type: none"> • Use anti-virus software <p>1 mark</p>
(c)	Customers can hire cars on the Techno Travel website. The cars include a speech recognition system which together with route planning software can help travellers find petrol stations, banks and other destinations.	
(i)	Suggest one task the driver will need to carry out before the speech recognition system can operate effectively.	<ul style="list-style-type: none"> • Train the software to recognise his voice <p>1 mark</p>
(ii)	Describe one problem that could affect the accuracy of the speech recognition system.	<ul style="list-style-type: none"> • Background noise from the engine • Traffic • Cold/sore throat <p>1 mark</p>

16.	<p>The owner of a double glazing company decides to motivate his staff with rewards like company cars and free holidays. A knowledge base like the one below is used. It contains facts about each employee and rules to decide which reward a member of staff is entitled.</p> <p>1 employee(alina,10000). <i>Means Alina is an employee with sales of £10,000</i></p> <p>2 employee(margaret,29000).</p> <p>3 employee(jason,10000).</p> <p>4 employee(tony,26000).</p> <p>5 manager(alina). <i>Means Alina is a manager</i></p> <p>6 manager(tony).</p> <p>7 female(alina). <i>Means Alina is female</i></p> <p>8 female(margaret).</p> <p>9 male(jason). <i>Means Jason is male</i></p> <p>10 male(tony).</p> <p>11 give_company_car(X) if manager(X). <i>Means give X a company car if X is a manager</i></p> <p>12 give_free_holiday(X) if employee(X, Y) and Y >25000 <i>Means give X a free holiday if X is an employee with sales Y and Y is greater than £25000</i></p>	
(a)	<p>What would be the first result of the following query? manager(X).</p>	<ul style="list-style-type: none"> • X=alina <p>1 mark</p>
(b)	<p>What would be the result of the following query? female(pauline)</p>	<ul style="list-style-type: none"> • No/fails/false <p>1 mark</p>
(c)	<p>What would be the result of the following query? give_company_car(margaret)</p>	<ul style="list-style-type: none"> • No/fails/false <p>1 mark</p>
(d)	<p>What would be all the results of the following query? give_free_holiday(X).</p>	<ul style="list-style-type: none"> • X=margaret and X=tony <p>1 mark each, 2 marks max</p>

	(e)	<p>Using the numbering system to help you, trace how the system will evaluate the query <code>give_free_holiday(X)</code> as far as the first solution.</p>	<ul style="list-style-type: none"> • <code>give_free_holiday(X)</code>. matches at 12 • <code>employee(X, Y)</code> matches at 1 with <code>X=alina</code> <code>Y=10000</code> • <code>10000>25000</code> false <p>1 mark for matching at 1 but this fails</p> <ul style="list-style-type: none"> • <code>employee(X,Y)</code> matches at 2 <code>X=margaret</code>, <code>Y=29000</code> • <code>29000>25000</code> true • Solution: <code>X=Margaret</code> <p>1 mark for matching at 2 and succeeds</p> <p>2 marks</p>
	(f)	<p>The knowledge base was written in a declarative language that uses <i>depth first search</i>. Describe what is meant by a “depth first search”. You may use a diagram to illustrate your answer</p>	<ul style="list-style-type: none"> • The search keeps extending the left hand node downwards (1 mark) • until it reaches a solution or backtracks (1 mark) to an earlier success point • Accept a diagram with clear drawing of path taken or list of nodes visited • eg  <p>A, B, D, B, E, B, A, C, F</p> <p>2 marks</p>

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

	SECTION III Part B – Computer Networking Attempt ALL questions in the Computer Networking section	Marking guidelines
17.	Alborough police station is networked through the Internet to national databases. The police use a web browser to access the Internet.	
	(a) One of the functions of a web browser is to access the World Wide Web. Describe one other function of a web browser.	<ul style="list-style-type: none"> • File transfer • E-mail • Navigation • Save pages • Print pages • History <p>1 mark for any one</p>
	(b) Police have received a message saying that a red car with a registration number starting SN damaged another car and drove off without stopping. (See paper) How could the police use the above screen to identify the owner of the car?	<ul style="list-style-type: none"> • Type red in Colour field • Type SN in Registration field (or SN* in Registration) • Click on the search button (or press return) <p>2 marks for all 3 1 mark for any two 0 marks for 1 or less</p>
	(c) It is essential that the Internet connection is always available and secure. Which type of Internet connection would be most suitable for Alborough police station?	<ul style="list-style-type: none"> • Leased line <p>1 mark</p>
	(d) The Internet Protocol (IP) address of the computer in Alborough police station is 129.137.2.56	
	(i) Which service allows a name to be used instead of an IP address?	<ul style="list-style-type: none"> • Domain Name Service (DNS) <p>1 mark</p>
	(ii) The URL for the police station may be www.alboroughpolice.co.uk Explain why this URL would not be suitable for a police station.	<ul style="list-style-type: none"> • .co.uk is for commercial companies and not suitable for police stations <p>1 mark</p>
	(e) Describe one physical security measure that could be taken in the police station to stop unauthorised access to national databases.	<ul style="list-style-type: none"> • Restrict physical access to computer by locking doors • Needing special pass to gain access to computer <p>1 mark for any one</p>

	(f)	A prisoner is demanding a printout of his criminal record. Explain why the police should not give him a printout of his record.	<ul style="list-style-type: none"> Police are exempt from parts of the <u>Data Protection Act</u> (DPA essential to answer) 1 mark
	(g)	Alborough police have arrested a trader selling illegal copies of computer games at the local market. Which piece of legislation has the trader broken?	<ul style="list-style-type: none"> Copyright, Design & Patents Act 1 mark
18.		WendyWear is a knitwear company. They have a shop in the Scottish Highlands, but would like to use the Internet to sell their products all over the world.	
	(a)	Describe two economic implications of WendyWear creating and hosting a website to sell their knitwear.	<ul style="list-style-type: none"> Increased Marketing opportunities Increased on-line sales Cost of creating and maintaining website Larger customer base Cost of hardware/set-up costs 1 mark each, 2 marks max
	(b)	WendyWear is now selling their products over the Internet.	
	(i)	WendyWear are worried about potential threats to the network such as hardware failure. Suggest two other potential threats to the network.	<ul style="list-style-type: none"> Software failure Data transmission failure Physical disasters Computer hackers Computer viruses 1 mark each, 2 marks max
	(ii)	Describe a <i>backup strategy</i> which would minimise the effect of a hardware failure to the server.	<ul style="list-style-type: none"> Kept in a different location Back up data regularly Duplicate hardware 1 mark each, 2 marks max
	(iii)	Enquiries can be e-mailed to WendyWear at enquiries@wendywear.co.uk What is the domain name of the above e-mail address?	<ul style="list-style-type: none"> wendywear.co.uk 1 mark
	(c)	Staff at WendyWear have access to the Internet. Give one reason why WendyWear may wish to filter access to websites.	<ul style="list-style-type: none"> To stop employees from accessing unsuitable websites To keep employees focussed on their work 1 mark for any one

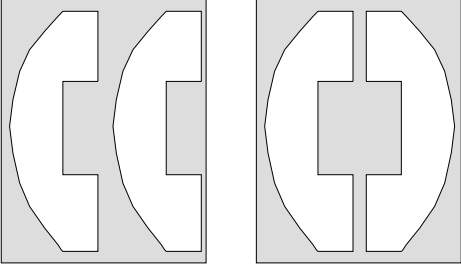
19.	Lesley lives in a large house and has a variety of computer hardware including desktop, laptop and palmtop computers.	
(a)	Lesley is thinking of networking the computers.	
	(i) Give two reasons why Lesley would set up a Wireless Local Area Network (WLAN) rather than a Wireless Personal Area Network (WPAN).	<ul style="list-style-type: none"> • WLAN has a greater range than WPAN • WLAN has a greater Data Transmission Rate than WPAN <p>1 mark each, 2 marks max</p>
	(ii) Suggest two items of additional hardware which Lesley would need to buy to set up the WLAN	<ul style="list-style-type: none"> • Transmitter • Receiver • (Frequently the transmitter and receiver are combined into what is known as an access point). • Wireless Network Interface Cards • Router/hub <p>1 mark each, 2 marks max</p>
	(iii) Suggest one way Lesley could ensure her neighbours would not be able to read the information from her wireless network.	<ul style="list-style-type: none"> • Data Encryption • WEP <p>Any 1 for 1 mark</p>
(b)	Describe two differences between the browser Lesley uses on her desktop computer and the microbrowser she uses on her palmtop computer.	<ul style="list-style-type: none"> • Microbrowser will have much smaller icons due to the restricted size of the palmtop screen • Microbrowser will need to display information in a greater number of screens • Microbrowsers will not have as full implementation of HTML as a browser • Can only access selected sites <p>1 mark each, 2 marks max</p>
(c)	Lesley used to have a separate games console, DVD player and e-mail facility. She has recently replaced them with a console that does all of these tasks. What term is used to describe home appliances with built-in communications capability?	<ul style="list-style-type: none"> • Converging Technologies <p>1 mark</p>

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

	<p align="center">SECTION III Part C – Multimedia Technology Attempt ALL questions in the Multimedia Technology section</p>	<p align="center">Marking guidelines</p>
20.	Pilotville High School has produced a video of their school show.	
	(a) The video was recorded and transferred to the computer for editing. The video file size was 8.6 gigabytes (Gb).	
	(i) To reduce the file size it was compressed using the MPEG format. Describe how MPEG compression reduces the file size.	<ul style="list-style-type: none"> • Only the changes between frames is saved rather than the entire frames. <p>1 mark</p>
	(ii) The video file size was still too large. Suggest two other ways that the video file size could be reduced.	<ul style="list-style-type: none"> • Reducing the colour depth • Reducing the resolution (video window size) • Reducing the frame rate <p>1 mark each, max 2 marks</p>
	(iii) The video lasted 32 minutes. What feature of the video editing software would allow the video to be reduced to 30 minutes?	<ul style="list-style-type: none"> • Cropping (or trimming) <p>1 mark</p>
	(iv) The finished video took up 3.8 gigabytes of storage space. Suggest a suitable backing storage medium for distributing the video.	<ul style="list-style-type: none"> • Rewritable DVD (accept just DVD) <p>1 mark</p>
	(v) As each video was copied, it was checked to ensure that it worked correctly on several computers. Which step of the software development process is being carried out?	<ul style="list-style-type: none"> • Testing <p>1 mark</p>
	(vi) When running the video, the computer kept rebooting unexpectedly. Suggest one reason for this happening.	<ul style="list-style-type: none"> • The media the video was on contained a virus <p>1 mark</p>
	(vii) On one computer system the sound couldn't be heard. The speakers were tested and found to be working. Suggest a piece of hardware that may be faulty or missing from that computer system.	<ul style="list-style-type: none"> • Sound card <p>1 mark</p>

	(b)	The front cover of the video will include a picture of the school. Either a digital camera or scanner could be used to input the picture.	
	(i)	Describe one advantage of using a digital camera rather than a scanner to input the picture of the school.	<ul style="list-style-type: none"> • Scanner would require photo to be taken then printed then scanned which would be more time consuming. • Digital camera can take picture and be downloaded to computer quicker than scanner. <p>1 mark for any one</p>
	(ii)	Name one piece of hardware found in both a scanner and digital camera.	<ul style="list-style-type: none"> • CCD (Charge Coupled Device) • (also accept Light Sensitive Diodes) <p>1 mark for any one</p>

21.	Digicorp is a company which produces multimedia games for young children.							
	(a) Digicorp talked to lots of young children to find out what sort of features they would want in their games.							
	(i) Which stage of the software development process was being carried out?	<ul style="list-style-type: none"> • Analysis Stage <p>1 mark</p>						
	(ii) Many children like 3D images in their games. One attribute of a vector 3D image is shape. Name two other attributes of a vector 3D image.	<ul style="list-style-type: none"> • Position • Size • Rotation • Texture <p>1 mark each, 2 marks max</p>						
	<p>(b) The music to accompany the game will be recorded using a microphone. The recording software allows the <i>sampling frequency</i> and the <i>sampling resolution (sampling depth)</i> to be altered.</p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p>Select settings :</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Sampling frequency</th> <th style="text-align: left; border-bottom: 1px solid black;">Sampling Resolution</th> </tr> </thead> <tbody> <tr> <td><input type="radio"/> 44 kHz</td> <td><input type="radio"/> 8 bits</td> </tr> <tr> <td><input type="radio"/> 96 kHz</td> <td><input type="radio"/> 16 bits</td> </tr> </tbody> </table> <div style="text-align: right; margin-top: 5px;"> <input type="button" value="Continue"/> </div> </div>	Sampling frequency	Sampling Resolution	<input type="radio"/> 44 kHz	<input type="radio"/> 8 bits	<input type="radio"/> 96 kHz	<input type="radio"/> 16 bits	
Sampling frequency	Sampling Resolution							
<input type="radio"/> 44 kHz	<input type="radio"/> 8 bits							
<input type="radio"/> 96 kHz	<input type="radio"/> 16 bits							
	(i) In order to have the smallest file size, which settings for the “sampling frequency” and “sampling resolution” should be chosen?	<ul style="list-style-type: none"> • Sampling frequency – 44 kHz • Sampling Resolution – 8 bits <p>1 mark each, 2 marks max</p>						
	(ii) Which standard file format for digitised sound would give the best quality sound with the smallest file size?	<ul style="list-style-type: none"> • MP3 • WMA <p>1 mark</p>						
	(iii) Instead of recording with a microphone, the music could be synthesised. Describe one method of creating music in this way.	<ul style="list-style-type: none"> • By playing music on a MIDI keyboard (or other MIDI device) • By using a MIDI software program to create the music <p>1 mark for any one</p>						

		(iv) What data format would be used to store the information from the synthesised music?	<ul style="list-style-type: none"> • MIDI 1 mark
22.		<p>The logo for a phone company was designed in a vector graphics package. The logo is shown below.</p>  <p>Picture A Picture B</p>	
	(a)	Picture A was drawn then edited to give Picture B.	
		(i) Describe how picture B was created from picture A.	<ul style="list-style-type: none"> • Select right hand phone and rotate (or flip) it 1 mark
		(ii) If the logo is scaled to double its size, what effect would this have on its quality when printed?	<ul style="list-style-type: none"> • It would have no effect on the printout quality. 1 mark
	(b)	What computer hardware is required to display graphics on a monitor?	<ul style="list-style-type: none"> • Graphics Card • Graphics Adaptor Card • Video Card 1 mark for any one
	(c)	<p>When first introduced, mobile phones could only be used for making telephone calls.</p> <p>Describe two multimedia features of a <i>Smart Phone</i> which were not originally available on mobile phones.</p>	<ul style="list-style-type: none"> • Text messaging • Photo messaging • Video messaging • Displaying Web pages • Playing MP3 files • E-mail • Playing games 1 mark each, 2 marks max
	(d)	<p>Multimedia applications can run as executable files.</p> <p>Describe two other ways that multimedia applications can be run.</p>	<ul style="list-style-type: none"> • Running under a Web browser • Running under a 'player' 1 mark each, 2 marks max

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

[END OF MARKING INSTRUCTIONS]