



# **2009 Information Systems**

## **Intermediate 2**

### **Finalised Marking Instructions**

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## SECTION 1

Question	Marks																																									
1	Describe <b>one</b> difference between <i>data</i> and <i>information</i> .	1																																								
Answer	<p>Any one from:</p> <ul style="list-style-type: none"><li>• <i>Data is raw/unprocessed facts and figures (whereas information is processed data.)</i></li><li>• <i>(Data has no context whereas) information is data in context so it has meaning.</i></li></ul>																																									
2	<p>The spreadsheet below shows the sales figures for a concert.</p> <table><tr><th></th><th>A</th><th>B</th><th>C</th><th>D</th></tr><tr><td>1</td><td colspan="4">Kinto Katz Ticket Sales</td></tr><tr><td>2</td><td></td><td>Quantity</td><td>Price</td><td>Value</td></tr><tr><td>3</td><td>Front Seating</td><td>150</td><td>£11.00</td><td>£1,650.00</td></tr><tr><td>4</td><td>Rear Seating</td><td>150</td><td>£12.00</td><td>£1,800.00</td></tr><tr><td>5</td><td>Upper Seating</td><td>200</td><td>£10.00</td><td>£2,000.00</td></tr><tr><td>6</td><td>Standing</td><td>500</td><td>£7.50</td><td>£3,750.00</td></tr><tr><td>7</td><td></td><td></td><td>Total</td><td>£9,200.00</td></tr></table>		A	B	C	D	1	Kinto Katz Ticket Sales				2		Quantity	Price	Value	3	Front Seating	150	£11.00	£1,650.00	4	Rear Seating	150	£12.00	£1,800.00	5	Upper Seating	200	£10.00	£2,000.00	6	Standing	500	£7.50	£3,750.00	7			Total	£9,200.00	
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7			Total	£9,200.00																																						
(a)	State <b>one</b> <i>data object</i> used in a spreadsheet.	1																																								
Answer	<p>Any one from:</p> <ul style="list-style-type: none"><li>• <i>Cell</i></li><li>• <i>Row</i></li><li>• <i>Column</i></li><li>• <i>Sheet</i></li><li>• <i>Range</i></li><li>• <i>Chart</i></li><li>• <i>(Do <b>not</b> accept text, number or the contents of any cell eg 150, Quantity).</i></li></ul>																																									
(b)	From the spreadsheet above, identify <b>one</b> <i>formatting function</i> that has been carried out.	1																																								
Answer	<p>Any one from:</p> <ul style="list-style-type: none"><li>• <i>Left align column A</i></li><li>• <i>Centre align column B</i></li><li>• <i>Right align column C or D</i></li><li>• <i>Change cell attributes to currency C1..D7</i></li><li>• <i>Change size, style font of cell A1</i></li><li>• <i>Merge cells A1..D1</i></li><li>• <i>Change column width of column A.</i></li></ul>																																									

## Question

## Marks

3	A travel agent allows customers to book holidays online. State the type of <i>validation</i> used to ensure that customers only choose holidays in countries offered by the travel agent.		1
<div><div>Select a destination</div><div><div>Pick a Location</div><div><div></div><div>▼</div></div><div>France</div><div>Germany</div><div>Italy</div><div>Spain</div><div>USA</div></div><div>Pick a city</div></div>			
Answer	<ul style="list-style-type: none"><li>• <i>Restricted choice (both terms required)</i></li></ul>		
4	Slideshows and brochures are used to advertise products.		
	(a)	Name the type of application software used to produce a slideshow.	1
Answer		<ul style="list-style-type: none"><li>• <i>Presentation</i></li><li>• <i>Do <b>not</b> accept Powerpoint or any other trade name.</i></li></ul>	
	(b)	Name the type of application software used to produce a brochure.	1
Answer		<ul style="list-style-type: none"><li>• <i>Publishing (accept word processing/desktop publishing/DTP/Desk Top Publisher)</i></li><li>• <i>Do <b>not</b> accept Publisher or any other trade name</i></li></ul>	
5	State <b>two</b> reasons why a company may need to have a network strategy.		2
Answer	<ul style="list-style-type: none"><li>• <i>To plan how to set up the network (1 mark)</i></li><li>• <i>To manage its distribution of data effectively (1 mark)</i></li></ul>		
6	State <b>one</b> advantage of using linked tables in a relational database rather than a flat file database.		1
Answer	Any one from: <ul style="list-style-type: none"><li>• <i>No data duplication</i></li><li>• <i>No data inconsistency</i></li><li>• <i>No data insertion anomalies</i></li><li>• <i>No data deletion anomalies</i></li><li>• <i>Do <b>not</b> accept to remove multi-valued fields.</i></li></ul>		

## Question

## Marks

7	The database below shows some of the results of runners taking part in the Olympic Fun Run.																																							
	<table><tr><td>No</td><td>Start</td><td>Finish</td><td>Forename</td><td>Surname</td><td>Gender (M/F)</td><td>Athletics Club</td></tr><tr><td>1011</td><td>10:15:00</td><td>11:12:17</td><td>Eric</td><td>Gallimore</td><td>M</td><td><a href="http://www.olympic-harriers.com">www.olympic-harriers.com</a></td></tr><tr><td>1475</td><td>10:15:00</td><td>11:15:33</td><td>Daniel</td><td>McHugh</td><td>M</td><td><a href="http://www.olympic-runners.co.uk">www.olympic-runners.co.uk</a></td></tr><tr><td>2232</td><td>10:20:00</td><td>11:41:12</td><td>Vicky</td><td>Chen</td><td>F</td><td><a href="http://www.ba-athleticsclub.co.uk">www.ba-athleticsclub.co.uk</a></td></tr><tr><td>2246</td><td>10:20:00</td><td>11:20:04</td><td>Jembu</td><td>Malf</td><td>M</td><td><a href="http://www.runfor-fun.org.uk">www.runfor-fun.org.uk</a></td></tr></table>			No	Start	Finish	Forename	Surname	Gender (M/F)	Athletics Club	1011	10:15:00	11:12:17	Eric	Gallimore	M	<a href="http://www.olympic-harriers.com">www.olympic-harriers.com</a>	1475	10:15:00	11:15:33	Daniel	McHugh	M	<a href="http://www.olympic-runners.co.uk">www.olympic-runners.co.uk</a>	2232	10:20:00	11:41:12	Vicky	Chen	F	<a href="http://www.ba-athleticsclub.co.uk">www.ba-athleticsclub.co.uk</a>	2246	10:20:00	11:20:04	Jembu	Malf	M	<a href="http://www.runfor-fun.org.uk">www.runfor-fun.org.uk</a>		
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	(a)	Suggest the most appropriate field type for the Start field.		1																																				
Answer		<ul style="list-style-type: none"><li>• Time</li><li>• Do <b>not</b> accept date/time</li></ul>																																						
	(b)	Suggest the most appropriate field type for the Athletics Club field.		1																																				
Answer		<ul style="list-style-type: none"><li>• Link (accept hyperlink)</li><li>• Do <b>not</b> accept URL</li></ul>																																						
8	Give <b>one</b> example of how the use of technology has changed the way people shop.			1																																				
Answer	Any suitable example from either customer or shopkeeper eg: <ul style="list-style-type: none"><li>• Self checkout at supermarket</li><li>• Ordering groceries online/using Internet</li><li>• Look up items in stock using terminals in shop</li><li>• Use of chip and PIN at checkout</li><li>• Self serve/payment pumps at petrol stations.</li></ul>																																							
9	The school information system shown below is used to print out a list of absentees. <table><tr><td>ID Number</td><td>Forename</td><td>Surname</td><td>Class</td></tr><tr><td>20081237</td><td>Alison</td><td>Begley</td><td>1A</td></tr><tr><td>20081348</td><td>Anna</td><td>Smith</td><td>1A</td></tr><tr><td>20081872</td><td>Mirza</td><td>Hanif</td><td>1B</td></tr><tr><td>20081903</td><td>Patrick</td><td>McCann</td><td>1B</td></tr><tr><td>20082760</td><td>Charlie</td><td>McKenzie</td><td>1B</td></tr><tr><td>20081845</td><td>Naiem</td><td>Mohammed</td><td>1C</td></tr><tr><td>20082856</td><td>Eilidh</td><td>Fraser</td><td>1D</td></tr><tr><td>20081992</td><td>Johann</td><td>Schmidt</td><td>1D</td></tr></table>			ID Number	Forename	Surname	Class	20081237	Alison	Begley	1A	20081348	Anna	Smith	1A	20081872	Mirza	Hanif	1B	20081903	Patrick	McCann	1B	20082760	Charlie	McKenzie	1B	20081845	Naiem	Mohammed	1C	20082856	Eilidh	Fraser	1D	20081992	Johann	Schmidt	1D	
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20081992	Johann	Schmidt	1D																																					
	(a)	Describe how the above list has been sorted.		2																																				
Answer		<ul style="list-style-type: none"><li>• Class ascending order (1 mark)</li><li>• (AND) Surname ascending order (1 mark)</li></ul>																																						

**Question****Marks**

	(b)	State <b>one</b> advantage of using an electronic information system rather than a manual system.	1
<b>Answer</b>		<p>Any one from:</p> <ul style="list-style-type: none"><li>• <i>Increased Speed</i></li><li>• <i>Increased Accuracy</i></li><li>• <i>Ability to process large Volumes of data quickly</i></li><li>• <i>Increased Efficiency</i></li><li>• <i>Searching can be performed much more quickly</i></li><li>• <i>Sorting can be performed much more quickly</i></li><li>• <i>Calculating can be performed much more quickly</i></li><li>• <i>Improved methods of data retrieval makes information more easily available to users</i></li><li>• <i>Data integrity is improved, resulting in more accurate information</i></li><li>• <i>Takes up less storage space</i></li><li>• <i>Easier to update.</i></li></ul>	
	<b>End of Section 1</b>		<b>Total for Section 1 (15)</b>

## SECTION 2

### Question

### Marks

10	PawsHome is a company with cat homes across Scotland. It stores information about its cat homes and employees on paper. A sample of the data held is shown below.																																														
	<table><tr><th>Employee Name</th><th>Gender</th><th>Age</th><th>Position</th><th>Employee No.</th><th>Cat Home</th><th>City</th></tr><tr><td>Peter Jones</td><td>Male</td><td>34</td><td>Manager</td><td>134</td><td rowspan="2">HOM23</td><td rowspan="2">Perth</td></tr><tr><td>Li Chan</td><td>Female</td><td>43</td><td>Secretary</td><td>145</td></tr><tr><td>Mary Smith</td><td>Female</td><td>29</td><td>Manager</td><td>234</td><td rowspan="2">HOM45</td><td rowspan="2">Inverness</td></tr><tr><td>Amadi Adumatta</td><td>Male</td><td>52</td><td>Secretary</td><td>265</td></tr><tr><td>Lisa Smith</td><td>Female</td><td>35</td><td>Cleaner</td><td>233</td><td rowspan="2">HOM19</td><td rowspan="2">Perth</td></tr><tr><td>Peter Jones</td><td>Male</td><td>36</td><td>Supervisor</td><td>237</td></tr></table>			Employee Name	Gender	Age	Position	Employee No.	Cat Home	City	Peter Jones	Male	34	Manager	134	HOM23	Perth	Li Chan	Female	43	Secretary	145	Mary Smith	Female	29	Manager	234	HOM45	Inverness	Amadi Adumatta	Male	52	Secretary	265	Lisa Smith	Female	35	Cleaner	233	HOM19	Perth	Peter Jones	Male	36	Supervisor	237	
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Peter Jones	Male	36	Supervisor	237																																											
	(a)	Before the database can be implemented, the data must be normalised.																																													
		(i)	Explain why the Employee Name attribute would <b>not</b> be suitable as a primary key.	1																																											
Answer			<ul style="list-style-type: none"><li>Two people could have the same name.</li><li>There are two employees called Peter Jones.</li><li>May need to change in future.</li></ul>																																												
		(ii)	Normalise the above table by removing the multi-valued fields, and show how it would be represented in two tables. Clearly indicate meaningful table names and the primary and foreign keys.	7																																											
Answer			<ul style="list-style-type: none"><li>Cat Home(<u>Cat Home</u>, City) – 1 mark for meaningful entity name, 1 mark for all attributes</li><li>Employee(<u>EmployeeNo.</u>, Employee Name, Gender, Age, Position, Cat Home*) 1 mark for meaningful entity name, 1 mark for all attributes</li><li>3 marks – primary and foreign keys (1 mark each)</li><li>If cat home in the employee entity is underlined (ie made a compound key with Employee No) then no mark should be awarded for the primary key of this entity.</li></ul>																																												
		(iii)	State the one to many relationship between the above tables.	1																																											
Answer			<ul style="list-style-type: none"><li>One cat home has many employees</li><li>Accept correct ER diagram</li><li>Do <b>not</b> accept ‘one to many’ on its own.</li></ul>																																												
	(b)	State the type of validation check that should be used to ensure that the Age attribute cannot be left empty.			1																																										
Answer		<ul style="list-style-type: none"><li>Presence (check)</li></ul>																																													

**Question****Marks**

	(c)	PawsHome must comply with the Data Protection Act.		
		(i)	In terms of the Data Protection Act, state what PawsHome must do before they store personal data?	1
<b>Answer</b>			<ul style="list-style-type: none"><li>• <i>Notify the Information Commissioner</i></li><li>• <i>Register with the Data Protection Registrar</i></li><li>• <i>Get data subjects permission</i></li><li>• <i>only this type of answer to be accepted for 1 mark.</i></li></ul>	
		(ii)	Who is the data controller in this case?	1
<b>Answer</b>			<ul style="list-style-type: none"><li>• <i>PawsHome</i></li></ul>	
	<b>Total Marks</b>			<b>(12)</b>

11	John runs a car rental dealership. He has created a database and started entering data into it. The database is shown below.																																						
			<table> <tr> <th>Reg No.</th><th>Make</th><th>Model</th><th>Engine Size (cc)</th><th>Daily Rental (£)</th></tr> <tr> <td>DCT04FT</td><td>Alpha</td><td>Siesta</td><td>1400</td><td>15</td></tr> <tr> <td>DCS04SJ</td><td>Alpha</td><td>Spring</td><td>1800</td><td>25</td></tr> <tr> <td>AEF54JY</td><td>Epsilon</td><td>Dash</td><td>1400</td><td>20</td></tr> <tr> <td>PFD53GF</td><td>Delta</td><td>Tiger</td><td>1400</td><td>20</td></tr> <tr> <td>EEE51EG</td><td>Sigma</td><td>Vector</td><td>1600</td><td>25</td></tr> <tr> <td>KTH50JJ</td><td>Alpha</td><td>Focus</td><td>1800</td><td>15</td></tr> </table>	Reg No.	Make	Model	Engine Size (cc)	Daily Rental (£)	DCT04FT	Alpha	Siesta	1400	15	DCS04SJ	Alpha	Spring	1800	25	AEF54JY	Epsilon	Dash	1400	20	PFD53GF	Delta	Tiger	1400	20	EEE51EG	Sigma	Vector	1600	25	KTH50JJ	Alpha	Focus	1800	15	
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EEE51EG	Sigma	Vector	1600	25																																			
KTH50JJ	Alpha	Focus	1800	15																																			
	(a)	A customer phones asking for a particular type of car. John used the database to output the following results.																																					
			<table> <tr> <th>Reg No.</th><th>Make</th><th>Model</th><th>Engine Size (cc)</th><th>Daily Rental (£)</th></tr> <tr> <td>DCS04SJ</td><td>Alpha</td><td>Spring</td><td>1800</td><td>25</td></tr> <tr> <td>KTH50JJ</td><td>Alpha</td><td>Focus</td><td>1800</td><td>15</td></tr> </table>	Reg No.	Make	Model	Engine Size (cc)	Daily Rental (£)	DCS04SJ	Alpha	Spring	1800	25	KTH50JJ	Alpha	Focus	1800	15																					
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DCS04SJ	Alpha	Spring	1800	25																																			
KTH50JJ	Alpha	Focus	1800	15																																			
		(i)	Describe how John queried the database to get the results shown above.	3																																			
Answer			<ul style="list-style-type: none"> <li>Search (1 mark) Make field for Alpha (1 mark) AND Engine Size field = 1800 (1 mark)</li> </ul> OR <ul style="list-style-type: none"> <li>Search (1 mark) Make field for Alpha (1 mark) AND Model field for Spring OR Focus (1 mark)</li> </ul> OR <ul style="list-style-type: none"> <li>Any other search that would give the correct table from the database shown.</li> </ul>																																				
		(ii)	What name is given to the printed output from a database?	1																																			
Answer			<ul style="list-style-type: none"> <li>Report</li> </ul>																																				
	(b)	Reg No. could be used as a <i>primary</i> key. What is the purpose of a “primary key”?		1																																			
Answer			<ul style="list-style-type: none"> <li>To uniquely identify a record/row</li> </ul>																																				
	(c)	When creating the database, John noticed that he could add an <i>object</i> type field. State <b>one</b> type of information that would be stored in an “object” type field.		1																																			
Answer		Any one from: <ul style="list-style-type: none"> <li>Picture/image/graphic</li> <li>Sound/audio</li> <li>Video/animation</li> </ul>																																					



**Question****Marks**

	(d)	Describe the purpose of the database user interface.	1
<b>Answer</b>		<ul style="list-style-type: none"><li>• <i>To allow the software and user to interact with each other.</i></li><li>• <i>To make databases easier to use.</i></li></ul>	
		<b>Total Marks</b>	<b>(7)</b>

## Question

## Marks

12	Blush sells cosmetics in their High Street shops.		
	(a)	Blush employs several <i>knowledge workers</i> .  Describe the job of a “knowledge worker”.	1
<b>Answer</b>		<ul style="list-style-type: none"> <li>Someone who processes or analyses information.</li> </ul>	
	(b)	Blush has a centralised database situated at its head office.	
	(i)	What is meant by a centralised database?	1
<b>Answer</b>		<p>Any one from:</p> <ul style="list-style-type: none"> <li>One copy of a database that services (can be accessed by) the whole organisation.</li> <li>Single database that stores all of an organisation’s data</li> </ul>	
	(ii)	At the end of each day, Blush’s information system is used to total that day’s sales and to save the results on the hard disk.  State the <b>two</b> functions of this information system that are being carried out at the end of each day.	2
<b>Answer</b>		<ul style="list-style-type: none"> <li>Processing information (1 mark)</li> <li>Storing information (1 mark)</li> <li>(Only these terms acceptable)</li> </ul>	
	(c)	Angelique has just joined Blush from another cosmetic company.	
	(i)	Angelique brought a copy of her previous employer’s test results for a new lip gloss.  State <b>one</b> of the ethical implications of Blush using these test results.	1
<b>Answer</b>		<p>Any one from:</p> <ul style="list-style-type: none"> <li>Would infringe the other employer’s Information Intellectual Property Rights</li> <li>Gives company an unfair advantage</li> <li>Breach of trust</li> <li>Stealing with reasoning that it is unethical</li> <li>Do <b>not</b> accept legal implications eg copyright.</li> </ul>	

**Question****Marks**

		(ii)	Before Angelique could start work, she had to sign Blush's <i>netiquette</i> agreement form.  Describe <b>two</b> rules you would expect to find on Blush's "netiquette" form.	2
<b>Answer</b>			Any two from:  <ul style="list-style-type: none"> <li>• Don't use language that would be offensive to others.</li> <li>• Don't use all capital letters in e-mails.</li> <li>• Etc.</li> </ul>	
		(iii)	Angelique uses a computer program that contains a series of tasks that teach her how to use Blush's database software.  Name this type of program.	1
<b>Answer</b>			Online tutorial.	
	(d)		Ken is a website developer for Blush who has recently created Blush's cosmetic online shop.	
		(i)	Name the type of software that would be most appropriate to build and maintain a complex website.	1
<b>Answer</b>			<ul style="list-style-type: none"> <li>• Web Authoring Software (Both Web and Authoring essential)</li> </ul>	
		(ii)	With the introduction of the online shop, Blush found that their sales had increased significantly due to new customers.  Give one example of how Blush may have gained new customers through the online shop.	1
<b>Answer</b>			Any one from: <ul style="list-style-type: none"> <li>• People in other countries would be able to buy their goods who could not get to their shops.</li> <li>• Disabled people who could not get out the house could shop online.</li> </ul>	
		(iii)	Ken has found that a former employer has been hacking into Blush's computer system.  State the law that the former employee has broken.	1
<b>Answer</b>			<ul style="list-style-type: none"> <li>• Computer Misuse Act</li> </ul>	
	<b>Total Marks</b>			<b>(11)</b>
	<b>Total for Section 2</b>			<b>(30)</b>

[END OF SECTION 2]

### SECTION 3






#### Part A – Applied Multimedia

Question	Marks
13 A museum has decided to create interactive multimedia information points around the museum.	
(a) Below is part of the report from the analysis stage.  <i>...the information points should allow visitors (targeted 8-14 year old children and their parents) to be able to see and hear the information about the exhibits without distracting other visitors around them. The refurbishment of the museum will be completed by November of this year and the information points must be created, tested and in place by then. The museum can afford to spend £15,000 on the development of the information points...</i>	
(i) The report on the analysis stage contains the purpose and budget available for the multimedia development. State <b>two</b> other aspects that have been considered in the above analysis report.	2
<b>Answer</b> Any two from:  <ul style="list-style-type: none"> <li>• User/audience</li> <li>• Timescale</li> <li>• Content</li> </ul> <i>(only these terms will be acceptable)</i>	
(ii) Recommend the most appropriate delivery medium for the museum to use in this situation.	1
<b>Answer</b> <ul style="list-style-type: none"> <li>• Kiosk</li> </ul>	
(b) One of the screens designs for the presentation is shown below.  <div style="border: 1px solid black; padding: 10px; margin: 10px auto; width: fit-content;"> <p style="text-align: center;">Egyptian Pharaohs</p> <p>Shown below are the years that Pharaohs ruled. Years are BC. Sneferu ruled from 2613 to 2589, <b>Khufu ruled from 2589 to 2566</b>. Djedefra ruled from 2566 to 2558 and Khafra ruled from 2588 to 2532.</p> </div> State <b>two</b> text design principles that have been broken in the creation of the above design.	2
<b>Answer</b> <ul style="list-style-type: none"> <li>• Restrict number of fonts (1 mark)</li> <li>• Use of lists and tables/bullet points (1 mark)</li> <li>• Do <b>not</b> accept not enough white space.</li> </ul>	

	(c)	<p>One of the screens from the museum information point is shown below.</p> <div> </div>	
	(i)	State the type of user interface being used above.	1
<b>Answer</b>		<ul style="list-style-type: none"> <li>• <i>Direct Manipulation/GUI</i></li> </ul>	
	(ii)	<p>This type of interface was chosen because of its ease of use. State <b>one</b> reason why the interface shown above is easy to use.</p>	1
<b>Answer</b>		<p>Any one from:</p> <ul style="list-style-type: none"> <li>• <i>Uses standard icons/symbols to signify actions</i></li> <li>• <i>No requirement for keyboard skills</i></li> <li>• <i>Don't need to remember commands.</i></li> </ul>	
	(d)	<p>During the testing stage, a <i>navigation test</i> was carried out.</p> <p>Explain the purpose of a “navigation test”.</p>	1
<b>Answer</b>		<p>Any one from:</p> <ul style="list-style-type: none"> <li>• <i>Check all links work</i></li> <li>• <i>Check no broken or out-of-date links</i></li> </ul>	
	(e)	<p>The museum evaluates the multimedia application in terms of <i>fitness for purpose</i>.</p> <p>Describe <b>one</b> method the museum could use to evaluate “fitness for purpose”.</p>	1
<b>Answer</b>		<p>Any one from:</p> <ul style="list-style-type: none"> <li>• <i>Comparing application to the original specification</i></li> <li>• <i>Focus group</i></li> <li>• <i>User questionnaire</i></li> <li>• <i>User observation.</i></li> </ul>	

**Question**

**Marks**

	(f)	The completed multimedia application plays background music.		
		(i)	The background music was captured by sampling. Explain how the sampling rate affects the quality of the audio.	1
Answer			<ul style="list-style-type: none"><li><i>The higher the sampling rate the better the audio quality.</i></li></ul>	
		(ii)	Describe <b>one</b> benefit of providing background music.	1
Answer			<ul style="list-style-type: none"><li><i>May enhance the information by adding atmosphere.</i></li></ul>	
	(g)	During the evaluation process, many museum staff complained that the background music can be repetitive and distracts them from their jobs.		
		(i)	Describe a <b>software</b> solution to the above problem.	1
Answer			<ul style="list-style-type: none"><li><i>Provide user-controlled volume controls.</i></li></ul>	
		(ii)	Describe a <b>hardware</b> solution to the above problem.	1
Answer			<ul style="list-style-type: none"><li><i>Provide headphones.</i></li></ul>	
	(h)	If visitors to the museum are unsure how to use the multimedia application, they can click on the <span style="border: 1px solid black; padding: 0 5px;">?</span> button and the following screen appears. <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"><div style="text-align: center;"><b>Controls</b></div><div style="display: flex; align-items: center;"><div style="margin-right: 10px;">    </div><div><p>- Back (Previous Screen)</p><p>- Play Sound</p><p>- Home Screen</p><p>- Play Video</p><p>- Forwards (Next Screen)</p></div></div><div style="text-align: center; margin-top: 10px;"><span style="border: 1px solid black; padding: 2px 10px;">Return to previous slide</span></div></div> <p>State the name given to this type of screen.</p>		1
Answer		<ul style="list-style-type: none"><li><i>Online help/User documentation</i></li></ul>		
	<b>Total Marks</b>			<b>(14)</b>

## Question

## Marks

14	MultiCorp develops multimedia applications for business.		
	(a)	State <b>two</b> examples of multimedia use for business.	2
<b>Answer</b>	<i>Any two from:</i> <ul style="list-style-type: none"> <li>• Advertising and selling products</li> <li>• Presentations</li> <li>• Training</li> <li>• Simulation.</li> </ul>		
	(b)	Mary is the project manager of MultiCorp's development team.  Describe <b>two</b> tasks that will be carried out by Mary as project manager.	2
<b>Answer</b>	<i>Any two from:</i> <ul style="list-style-type: none"> <li>• Coordinates the team members/ensure team are doing their job correctly</li> <li>• Deals with customers to ensure they are happy with the design and final project</li> <li>• Controls budget</li> <li>• Controls timescales</li> <li>• Allocates tasks to rest of team.</li> </ul>		
	(c)	The design for MultiCorp's latest application is shown below.  <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <b>Slide 1</b>  <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px; width: 40px; height: 40px; text-align: center;">Photo of flower</div> <div style="border: 1px solid black; padding: 5px; width: 40px; height: 40px; text-align: center;">Camera settings</div> </div> <div style="text-align: right; margin-top: 5px;">→</div> </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <b>Slide 2</b>  <div style="border: 1px solid black; padding: 5px; width: 100px; height: 40px; text-align: center; margin-top: 10px;">Technical names of common flowers</div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <span>←</span> <span>→</span> </div> </div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <b>Slide 3</b>  <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px; width: 40px; height: 40px; text-align: center;">Photo of garden</div> <div style="border: 1px solid black; padding: 5px; width: 40px; height: 40px; text-align: center;">Names of flowers</div> </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <span>←</span> <span>→</span> </div> </div> </div>	
	(i)	State the type of navigation structure that would be most appropriate in this case.	1
<b>Answer</b>		<ul style="list-style-type: none"> <li>• Linear</li> </ul>	
	(ii)	State the type of software you would recommend MultiCorp use for this project.	1
<b>Answer</b>		<ul style="list-style-type: none"> <li>• Presentation</li> </ul>	
	(iii)	State the job title of the person who would provide the technical knowledge that is required for the creation of slide two.	1
<b>Answer</b>		<ul style="list-style-type: none"> <li>• Subject expert</li> </ul>	

**Question****Marks**

	(d)	MultiCorp's project includes 700 colour photographs which take up 6.5 gigabytes of storage. The graphic artist has been instructed to reduce the storage requirements for the photographs from 6.5 gigabytes to 3 gigabytes.	
	(i)	Describe <b>two</b> methods of reducing the storage required for the photographs.	2
<b>Answer</b>		<p><i>Any two from:</i></p> <ul style="list-style-type: none"> <li>• <i>Reduction of resolution</i></li> <li>• <i>Reduction of colour depth</i></li> <li>• <i>Compress the file OR (save it as a JPEG)</i></li> <li>• <i>Do <b>not</b> accept cropping.</i></li> </ul> <p><i>One mark each.</i></p>	
	(ii)	Name the storage medium that would be best suited for distributing the project to customers.	1
<b>Answer</b>		<ul style="list-style-type: none"> <li>• <i>DVD-ROM/DVD-R/DVD-RW</i></li> <li>• <i>Do <b>not</b> accept USB flash drive or DVD.</i></li> </ul>	
	(iii)	Some of the photographs have been copied from a website.  Which law may have been broken?	1
<b>Answer</b>		<ul style="list-style-type: none"> <li>• <i>Copyright, Designs and Patents Act</i></li> </ul>	
<b>Total Marks</b>			<b>(11)</b>
<b>Total for Section 3 Part A</b>			<b>(25)</b>



### SECTION 3

#### Part B – Expert Systems

Question			Marks
15	A new expert system is being developed for a travel company to advise tourists on suitable types of holidays.		
	(a)	One stage of the expert system development cycle is <i>knowledge representation</i> .	
	(i)	State the personnel involved at the “knowledge representation” stage.	1
<b>Answer</b>		<ul style="list-style-type: none"> <li>• <i>Knowledge engineer.</i></li> </ul>	
	(ii)	State <b>one</b> technique used at the “knowledge representation” stage.	1
<b>Answer</b>		<i>Any one from:</i> <ul style="list-style-type: none"> <li>• <i>Decision trees</i></li> <li>• <i>Factor tables.</i></li> </ul>	
	(b)	<p>The diagram below shows a screen from the initial version of the expert system.</p> <div style="border: 1px solid black; padding: 10px; margin: 10px;"> <p>Q: Do you want a high activity holiday? <span style="float: right; border: 1px solid black; padding: 2px 5px;">Why?</span></p> <p><b>User response: yes</b></p> <p>Q: Do you want a beach location? <span style="float: right; border: 1px solid black; padding: 2px 5px;">Why?</span></p> <p><b>User response: yes</b></p> <p>Advice: You should choose a water sports holiday. <span style="float: right; border: 1px solid black; padding: 2px 5px;">Explain</span></p> </div>	
	(i)	<p>The <i>inference engine</i> is one component of an expert system.</p> <p>Identify one element shown above which was <b>generated</b> by the “inference engine”.</p>	1
<b>Answer</b>		<i>Any one from:</i> <ul style="list-style-type: none"> <li>• ‘Do you want a high activity holiday’</li> <li>• ‘Do you want a beach location’</li> <li>• ‘Advice: You should choose a water sports holiday’.</li> </ul> <i>Only acceptable answers.</i>	

Question			Marks
	(ii)	State which component of the expert system is responsible for <b>displaying</b> “Q: Do you want a beach location?”	1
Answer		<ul style="list-style-type: none"> <li>• <i>User interface</i></li> </ul>	
	(iii)	State which component of the expert system would be altered when a new type of holiday is added.	1
Answer		<ul style="list-style-type: none"> <li>• <i>Knowledge base</i></li> </ul>	
	(iv)	Describe the purpose of the “Explain” button on the screen	1
Answer		<ul style="list-style-type: none"> <li>• <i>Explains how the advice/conclusion was reached.</i></li> </ul>	
	(v)	Describe the purpose of the “Why?” button on the screen.	1
Answer		<ul style="list-style-type: none"> <li>• <i>Why – explains why the question is being asked.</i></li> </ul>	
	(c)	Describe <b>two</b> economic implications for the travel company of introducing the holiday expert system.	2
Answer		<p><i>Any two from:</i></p> <p><i>Description of improved productivity/profitability in relation to holiday company –</i></p> <ul style="list-style-type: none"> <li>• <i>Reduce time taken to find suitable holidays for customers (1) will lead to better customer satisfaction (1)</i></li> </ul> <p><i>OR</i></p> <ul style="list-style-type: none"> <li>• <i>Holiday company will incur large development cost of expert system (1) but may recoup cost through improved profitability (1)</i></li> </ul> <p><i>OR</i></p> <ul style="list-style-type: none"> <li>• <i>Holiday company may incur large development cost of expert system (1) but could reduce wages/bills as less need for staff.</i></li> </ul>	
	(d)	Another expert system is being developed. This will list holiday items that should be packed. It will also provide a set of steps to follow so that tourists are organised. State the category of this expert system.	1
Answer		<ul style="list-style-type: none"> <li>• <i>Planning</i></li> </ul>	
	(e)	Describe how querying an expert system would differ from querying a database.	2
Answer		<ul style="list-style-type: none"> <li>• <i>Database: set up search query criteria or set up SQL query (1 mark).</i></li> <li>• <i>Expert system: respond to structured questions asked in an interactive manner (1 mark).</i></li> </ul>	
<b>Total Marks</b>			<b>(12)</b>

## Question

## Marks

16	<p>A digital television company offers four packages to their customers, each with a different range of channels – Basic, Bronze, Silver and Gold.</p> <p>The Basic package includes 15 TV channels. The Gold package allows the customer to add three more “options” to their package.</p> <p>The Silver package allows a choice of two out of three “options” to be added, while Bronze allows only one “option” to be added.</p> <p>Shown below is <b>part</b> of the factor table showing knowledge to be entered into the expert system.</p> <table><tr><td>Sports Option</td><td>Movies Option</td><td>Kids Option</td><td>Package</td></tr><tr><td>Yes</td><td>Yes</td><td>Yes</td><td>Gold</td></tr><tr><td>Yes</td><td>Yes</td><td>No</td><td>Silver</td></tr><tr><td>Yes</td><td>No</td><td>Yes</td><td>Silver</td></tr><tr><td>No</td><td>Yes</td><td>Yes</td><td>Silver</td></tr></table>			Sports Option	Movies Option	Kids Option	Package	Yes	Yes	Yes	Gold	Yes	Yes	No	Silver	Yes	No	Yes	Silver	No	Yes	Yes	Silver	
Sports Option	Movies Option	Kids Option	Package																					
Yes	Yes	Yes	Gold																					
Yes	Yes	No	Silver																					
Yes	No	Yes	Silver																					
No	Yes	Yes	Silver																					
	(a)	Complete the factor table using the knowledge available.	4																					
Answer		<table><tr><td>Sports Option</td><td>Movies Option</td><td>Kids Option</td><td>Package</td></tr><tr><td>Yes</td><td>No</td><td>No</td><td>Bronze</td></tr><tr><td>No</td><td>Yes</td><td>No</td><td>Bronze</td></tr><tr><td>No</td><td>No</td><td>Yes</td><td>Bronze</td></tr><tr><td>No</td><td>No</td><td>No</td><td>Basic</td></tr></table> <p><i>1 mark for each correct row for bronze and basic.</i></p>	Sports Option	Movies Option	Kids Option	Package	Yes	No	No	Bronze	No	Yes	No	Bronze	No	No	Yes	Bronze	No	No	No	Basic		
Sports Option	Movies Option	Kids Option	Package																					
Yes	No	No	Bronze																					
No	Yes	No	Bronze																					
No	No	Yes	Bronze																					
No	No	No	Basic																					
	(b)	Write a rule to represent the “Gold” package from the knowledge in the table.	3																					
Answer		<p><i>IF ‘Sports option’ IS Yes AND ‘Movies option’ IS Yes AND ‘Kids option’ IS Yes THEN Package IS Gold.</i></p> <p><i>OR</i></p> <p><i>ADVISE Package IS gold IF ‘Sports option’ IS Yes AND ‘Movies option’ IS Yes AND ‘Kids option’ IS Yes.</i></p> <p><i>4 correct parts – 3 marks, 3 correct parts – 2 marks, 2 correct parts – 1 mark, Otherwise 0 marks.</i></p>																						
	Total Marks		(7)																					

## Question

## Marks

17	Pat suffers from very painful joints, especially in his knees and elbows.  Pat learns about an online expert system that can be used at home to find out more about these problems.		
	(a)	The expert system could be evaluated by its purpose and <i>domain</i> of expertise.	
	(i)	State the “domain” of this expert system.	1
<b>Answer</b>		<ul style="list-style-type: none"> <li>• <i>Illnesses/medical conditions</i></li> </ul>	
	(ii)	State <b>one other</b> characteristic that could be used to evaluate the expert system.	1
<b>Answer</b>		<i>Any one from:</i> <ul style="list-style-type: none"> <li>• <i>Range and coverage of rules</i></li> <li>• <i>Quality of user interface (structure/syntax/order of questions asked, presentation of conclusion, quality of explanation facilities).</i></li> </ul>	
	(b)	Two methods of inferencing that can be used in an expert system are <i>forward chaining</i> and <i>backward chaining</i> .	
	(i)	Explain what is meant by “forward chaining” and “backward chaining”.	2
<b>Answer</b>		<ul style="list-style-type: none"> <li>• <i>Forward chaining is when you know the initial facts working to a conclusion (1 mark)</i></li> <li>• <i>Backward chaining is starting with the conclusion and working to find the facts to justify it. (1 mark)</i></li> </ul>	
	(ii)	Describe <b>one</b> advantage of using forward chaining in this expert system.	2
<b>Answer</b>		<ul style="list-style-type: none"> <li>• <i>Starts from known facts as painful joints (1 mark), to reach diagnosis more directly rather than guessing hypothesis and finding facts to support it (1 mark).</i></li> <li>• <i>With so many possible hypothesis (1 mark), too many symptoms to eliminate if backward chaining used (1 mark).</i></li> <li>• <i>Answer must refer to the medical scenario to be awarded full marks.</i></li> </ul>	
	<b>Total Marks</b>		<b>(6)</b>
	<b>Total for Section 3 Part B</b>		<b>(25)</b>

## SECTION 3

### Part C – The Internet

Question	Marks
18 Ray is configuring the latest version of an e-mail client to send and receive his e-mail. The e-mail client uses POP and SMTP protocols.	
(a) State the purpose of POP and SMTP protocols.	2
<b>Answer</b>	<ul style="list-style-type: none"> <li>• <i>POP – protocol used to receive mail from the server (1 mark).</i></li> <li>• <i>SMTP – protocol used to send/transmit e-mail across the network (1 mark).</i></li> </ul>
(b) When this message is transmitted over the Internet, it is divided into <i>packets</i> .  Explain why the message is divided into packets.	2
<b>Answer</b>	<ul style="list-style-type: none"> <li>• <i>Allows message to be transmitted over several routes: (1 mark) to increase network efficiency (1 mark).</i></li> <li>• <i>So that if the message is intercepted (1 mark) only that block can be read (1 mark) and not the whole message.</i></li> <li>• <i>So if message is corrupted (1 mark) then only that packet needs to be resent (1 mark) not whole message.</i></li> <li>• <i>Multiple users can use the network (1 mark) without waiting for other users to complete data transfer (1 mark).</i></li> </ul>
(c) The e-mail client inserts Ray's contact details at the end of each e-mail. <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> Ray Tomlison  111 Mains Water Road  Glasgow  E-mail: <a href="mailto:R.Tomlison@parpanet.org">R. Tomlison@parpanet.org</a>  Tel: 0141 496 0001  Fax: 0141 496 0002 </div>	
(i) State <b>one</b> reason why Ray includes contact details in the e-mail.	1
<b>Answer</b>	<i>In case someone wants to contact him using phone, fax or postal mail.</i>
(ii) Describe <b>one</b> concern Ray might have about including his contact details at the end of the e-mail.	1
<b>Answer</b>	<ul style="list-style-type: none"> <li>• <i>His details may be used to send spam e-mails or junk mail.</i></li> </ul>

**Question****Marks**

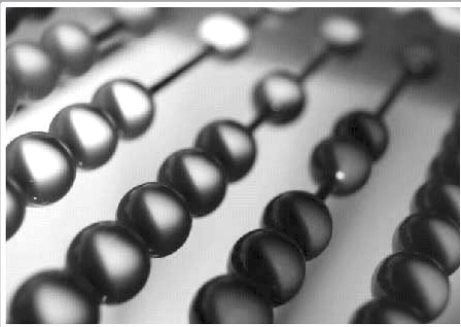
	(d)	Ray is concerned that a virus could be downloaded as an e-mail attachment.  Suggest <b>two</b> methods of reducing the risk of a virus infecting Ray's computer.	2
<b>Answer</b>		<i>Any two from:</i> <ul style="list-style-type: none"><li>• <i>Use virus-scanning software to detect and remove viruses</i></li><li>• <i>Update anti-virus software regularly</i></li><li>• <i>Delete or ignore messages with attachments from people he does not know.</i></li></ul> <i>1 mark each.</i>	
	<b>Total Marks</b>		<b>(8)</b>

**Question**

**Marks**

19	Chumms.com is a social networking website that allows friends to keep in touch when online.		
	(a)	Name the Internet service that allows friends to communicate in real-time.	1
<b>Answer</b>		<ul style="list-style-type: none"> <li>• <i>Chat OR Instant messaging/Conferencing/Video Conferencing</i></li> <li>• <i>Do <b>not</b> accept Messenger or instant messenger.</i></li> </ul>	
	(b)	<p>Chumms.com allows members to share photographs.</p> <p>Photographs are uploaded to the member's profile page.</p> <p>Name the protocol used to upload a photo.</p>	1
<b>Answer</b>		<ul style="list-style-type: none"> <li>• <i>FTP OR File Transfer Protocol.</i></li> </ul>	
	(c)	Many schools have blocked the Chumms website to prevent pupils from accessing it.	
	(i)	Suggest <b>one</b> reason why schools have blocked this website.	1
<b>Answer</b>		<p><i>Any one from:</i></p> <ul style="list-style-type: none"> <li>• <i>Prevent pupils/students wasting time</i></li> <li>• <i>Inappropriate content</i></li> <li>• <i>Keeping pupils safe.</i></li> </ul>	
	(ii)	Suggest <b>one</b> reason why pupils should be allowed access to Chumms.com.	1
<b>Answer</b>		<p><i>Any one from:</i></p> <ul style="list-style-type: none"> <li>• <i>Allows pupils/students to communicate with other pupils/students/friends.</i></li> <li>• <i>Censorship is inappropriate in this situation.</i></li> <li>• <i>Encourages collaborative working.</i></li> <li>• <i>Reduces Nanny State culture.</i></li> </ul>	
<b>Total Marks</b>			<b>(4)</b>

**Question**
**Marks**

20	The diagram below shows a school Web page.		
	<div style="border: 1px solid black; padding: 10px; background-color: #d3d3d3; width: fit-content; margin: auto;"> <p style="text-align: center; font-size: 1.2em;">School.sch.uk</p> <div style="display: flex; align-items: center;"> <ul style="list-style-type: none"> <li>• School</li> <li style="padding-left: 10px;">- Teachers</li> <li style="padding-left: 10px;">- Pupils</li> <li style="padding-left: 10px;">- Parents</li> <li>• Teaching</li> <li>• Learning</li> </ul>  </div> </div>		
	(a)	The layout of the Web page above has been defined using the table tool. The menu allows you to navigate from this page to other pages and the graphic animates when the pointer is moved over it.	
		(i) State the feature of the Web authorising software, which has been used to create the menu.	1
<b>Answer</b>		<ul style="list-style-type: none"> <li>• <i>Hyperlink tool</i></li> <li>• <i>Text tool</i></li> <li>• <i>(the word tool is essential).</i></li> </ul>	
		(ii) A <i>scripting tool</i> has been used to animate the graphic.  Describe what is meant by a “scripting tool”.	1
<b>Answer</b>		<ul style="list-style-type: none"> <li>• <i>A tool that allows programs/code to be written.</i></li> </ul>	



	(b)	<p>Here is the website file structure for <a href="http://www.school.sch.uk">www.school.sch.uk</a>.</p> <pre> graph TD     home[home] --- index[index.html]     home --- primary[primary]     home --- secondary[secondary]     secondary --- page1[page 1.htm]     secondary --- page2[page 2.htm]     secondary --- video[video]     secondary --- pics[pics]     video --- vid1[vid1.avi]     video --- vid2[vid2.avi]     pics --- face[face.jpg]     pics --- icon[icon.jpg]   </pre> <p>John is adding links to the <b>page1.htm</b> web page.</p>	
	(i)	State the absolute address John will enter on page1.htm to link to face.jpg	2
Answer		<ul style="list-style-type: none"> <li><a href="http://www.school.sch.uk/secondary/pics/face.jpg">http://www.school.sch.uk/secondary/pics/face.jpg</a></li> </ul> <p>1 mark for domain and 1 mark for the path.</p>	
	(ii)	State the relative address John will enter on page1.htm to link to icon.jpg	1
Answer		<ul style="list-style-type: none"> <li><code>pics/icon.jpg</code></li> </ul>	
	(c)	Explain why picture compression is used on a website.	2
Answer		<p>Any two from:</p> <ul style="list-style-type: none"> <li>to reduce the file size</li> <li>so that it does not require a lot of band width</li> <li>to allow the page/photo to load more quickly</li> <li>Do <b>not</b> accept to reduce the size of the picture.</li> </ul>	
	(d)	<p>A browser is used to navigate from one page to another.</p> <p>Name the facility of a browser, which allows you to store a web address for later access.</p>	1
Answer		<ul style="list-style-type: none"> <li>Bookmark OR Favourites.</li> </ul>	
Total Marks			(8)

**Question****Marks**

21	Emma's favourite band is MacFlee. She is using a search engine to find the title of MacFlee's first song.		
	(a)	State a Boolean search that could be entered by Emma to find this information.	3
<b>Answer</b>		<ul style="list-style-type: none"> <li>• <i>MacFlee (1 mark)</i></li> <li>• <i>AND First (1 mark)</i></li> <li>• <i>AND Song (1 mark)</i></li> </ul> OR <ul style="list-style-type: none"> <li>• <i>MacFlee (1 mark)</i></li> <li>• <i>AND "First Song" (1 mark for AND first song) (1 mark for quote marks)</i></li> </ul>	
	(b)	Emma wishes to listen to MacFlee's first song. Describe how Emma could use the advanced features of a search engine to find the song file.	1
<b>Answer</b>		<i>Any one from:</i> <ul style="list-style-type: none"> <li>• <i>Select an audio search</i></li> <li>• <i>Add filetype mp3 or wav or wma.</i></li> </ul>	
	(c)	<p>When Emma selects one of the websites suggested by the search engine, several pop-up windows appear.</p> <p>Name the type of software you would recommend Emma installs to prevent the pop-up windows.</p>	1
<b>Answer</b>		<i>Any one from:</i> <ul style="list-style-type: none"> <li>• <i>Anti-Spyware</i></li> <li>• <i>Anti-Malware</i></li> <li>• <i>Pop-Up Blocker.</i></li> </ul>	
<b>Total Marks</b>			<b>(5)</b>
<b>Total for Section 3 Part C</b>			<b>(25)</b>

[END OF MARKING INSTRUCTIONS]