

Mark Scheme for January 2011

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All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the Report on the Examination.

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Question		Expected Answer	Mark	Rationale/Additional Guidance															
1	(a)	<p>Two from:</p> <p>Thumbprint data is already stored/thumbprint is already on database Thumbprint is compared with pre-stored data/database is searched for a match Identifies user to system/authentication technique System uses data to prevents unauthorised access</p>	[2]																
	(b)	<p>(Reading) bar codes (Reading) magnetic stripe (reading) chip Eye/iris/retina scan Face recognition</p>	[2]																
	(c)	<p>Reduces impersonation/impossible to duplicate data/thumbprints are unique No problems forgetting cards/ don't need cards/won't forget thumbprint/always have it with you Cards might get damaged Quicker than using a keyboard More accurate than using a keyboard</p>	[2]																
2		<table border="1"> <thead> <tr> <th></th> <th>True (✓)</th> <th>False (✓)</th> </tr> </thead> <tbody> <tr> <td>The double entry method requires the computer to compare the different versions</td> <td>✓</td> <td></td> </tr> <tr> <td>Verification checks that data is copied correctly</td> <td>✓</td> <td></td> </tr> <tr> <td>Verification makes sure that data is correct</td> <td></td> <td>✓</td> </tr> <tr> <td>Visual checking requires the data on the screen to be read</td> <td>✓</td> <td></td> </tr> </tbody> </table>		True (✓)	False (✓)	The double entry method requires the computer to compare the different versions	✓		Verification checks that data is copied correctly	✓		Verification makes sure that data is correct		✓	Visual checking requires the data on the screen to be read	✓		[4]	<p>Correct Answer Only Subtract one mark for every extra tick down to a minimum of 0</p>
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3	(a)	<p>Three from:</p> <p>The standard of the finished product is more consistent Robots don't take breaks from work Robots don't have to be paid (a weekly wage) Robots can work in a hazardous environment/don't get hurt/can work in confined spaces Robots are more accurate than humans Can work 24/7 Easier to produce to individualised requirements Greater productivity</p>	[3]																
	(b)	<p>Three from:</p> <p>Expensive to set up/maintain/repair Are unable to cope with unusual circumstances Can only perform one task at one time Cause human unemployment Cause humans to need to retrain When mistakes made in programming can mean several cars wrongly produced (before it is noticed)</p>	[3]																
4		<table border="1"> <thead> <tr> <th></th> <th>Star (✓)</th> <th>Ring (✓)</th> </tr> </thead> <tbody> <tr> <td>Each computer is directly connected to two other computers</td> <td></td> <td>✓</td> </tr> <tr> <td>If one computer fails the whole network crashes</td> <td></td> <td>✓</td> </tr> <tr> <td>The network uses more cabling</td> <td>✓</td> <td></td> </tr> <tr> <td>There is less disruption to the network when adding another computer</td> <td>✓</td> <td></td> </tr> </tbody> </table>		Star (✓)	Ring (✓)	Each computer is directly connected to two other computers		✓	If one computer fails the whole network crashes		✓	The network uses more cabling	✓		There is less disruption to the network when adding another computer	✓		[4]	<p>Correct Answer Only Subtract one mark for every extra tick down to a minimum of 0</p>
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5	Four from: To save storage space <ul style="list-style-type: none"> • codes are shorter To save time when entering data/is easier to enter data <ul style="list-style-type: none"> • less typing to do To reduce the chance of data entry errors <ul style="list-style-type: none"> • less typing so less chance of making errors To make validation easier <ul style="list-style-type: none"> • routines are less complicated as only have to include codes/don't have to type data out in full To make verification easier <ul style="list-style-type: none"> • easier to compare codes than complete set of data 	[4]	Any four points/expansions
6	Two from: Temperature/thermistor Humidity/moisture Light pH/acidity CO ₂ /O ₂	[2]	Mark first two answers only. Do not accept heat or water
	(b) Four from: At range of pre set values is entered Microprocessor/computer receives reading from sensor Microprocessor/computer compares reading with lower level If higher microprocessor/computer does nothing If lower microprocessor/computer switches on light/sprinkler/heater/switches off fan/closes windows/shutters This will cause the reading to increase Microprocessor/computer compares reading with higher level If greater microprocessor/computer switches off light/sprinkler/heater or opens shutters/windows/switches on fan This causes the reading to reduce The whole process is repeated. Use of ADC/DAC	[4]	Any four points Order is not important If too hot microprocessor – allow once only

Question	Expected Answer	Mark	Rationale/Additional Guidance
7	<p>Six from:</p> <p>At least three items of data listed:</p> <ul style="list-style-type: none"> • including an example of abnormal, normal and extreme data • identifying which is extreme (0 or 100) • identifying which is normal (0 to 100 inclusive) • identifying which is abnormal (less than 0, greater than 100, non numeric characters) <p>Explanation of why normal data is used - to test that normal data is accepted by the system/make sure validation is working</p> <p>Explanation of why abnormal data is used – to test that such data is rejected by the system/make sure validation is working</p> <p>Explanation of why extreme data is used – to test that extreme data is accepted by the system/make sure validation is working</p> <p>Explanation of why live data would be used</p>	[6]	<p>Any three data items will gain a mark</p> <p>A list containing one of each category is worth another mark.</p> <p>eg</p> <p>0, 42,-12 will gain two marks</p> <p>'0 is extreme data' is worth another mark</p> <p>'42 is normal data' is worth another mark</p> <p>'-12 is abnormal data' is worth another mark</p> <p>Only allow make sure validation is working once only</p>
8	<p>Four from:</p> <p>Questions are asked by system</p> <p>Symptoms/answers are typed in</p> <p>Further questions are asked depending on answers to previous questions</p> <p>Expert system compares symptoms</p> <ul style="list-style-type: none"> – with those in the knowledge base – using inference engine – using rules base – matches are found <p>Suggested/probable diagnoses output</p> <p>Doctor uses professional judgement based on suggestions from expert system</p>	[4]	Order is not important

Question	Expected Answer	Mark	Rationale/Additional Guidance
9	<p>Six from:</p> <p>Database created/loaded/opened Word processor opened Linked with database Search performed – on date of birth field – for values pre January 1951 Letter created/written Field names/place holders are placed in appropriate places in the letter Address field read off for matching records Field names replaced with actual data from database/ merge the files</p>		<p>Order is not important</p> <p>Accept examples of place holders e.g. <Name></p>
10	<p>Six from:</p> <p>Purpose of the system The limitations of the system The hardware required to run the system The software required to run the system Instructions on how to use the system/save data/add data/delete data/amend data/print data/log on Annotated screenshots of the system Sample outputs from the system Description of the inputs Description of the outputs Description of error messages Troubleshooting guide/FAQ/list of common problems</p>	[6]	Do not accept one word answers

Question	Expected Answer	Mark	Rationale/Additional Guidance
11	<p>Eight from:</p> <p>DTP</p> <p><i>Advantages</i></p> <p>Disabled teenagers do not have to travel to the library</p> <ul style="list-style-type: none"> • is safer/parents won't be worried • can find it difficult to travel • disabled people tend to be less mobile <p>Parents won't have to transport teenagers to library</p> <ul style="list-style-type: none"> • saves cost of travelling • saves time spent on travelling <p>It can be read at a time to suit the reader</p> <ul style="list-style-type: none"> • presentations will be at set times • presentation times may not suit the teenagers <p>Can be produced in Braille</p> <ul style="list-style-type: none"> • the visually impaired may not be able to read text on a presentation <p>Can use special large size fonts</p> <ul style="list-style-type: none"> • visually impaired may not be able to decipher text at a distance in a presentation <p>More people will see it than the presentation</p> <p><i>Disadvantages</i></p> <p>Need for physical distribution</p> <ul style="list-style-type: none"> • may need to pay somebody to deliver the magazines • may have to spend time delivering them (himself) <p>No multimedia sound/animation/video</p> <ul style="list-style-type: none"> • less exciting/interesting <p>Printing a magazine costs more than showing a presentation/is wasteful as not every household has disabled teenagers.</p> <ul style="list-style-type: none"> • paper and ink costs <p>Difficult to grip for teenagers</p> <ul style="list-style-type: none"> • may have hand/finger/wrist disabilities 		<p>Do not have to get reasoned conclusion for full marks</p> <p>Do not give a mark for disadvantage of one and an advantage of the other ie DTP there is no sound whereas presentation contains sound is worth one mark only.</p> <p>Do not award marks for rewording the question</p>

Question	Expected Answer	Mark	Rationale/Additional Guidance
	<p>Presentation</p> <p><i>Advantages</i></p> <p>Sound</p> <ul style="list-style-type: none"> • visually impaired don't have to read/can listen to presentation <p>Animation/Video</p> <ul style="list-style-type: none"> • more exciting/interesting (for teenagers) <p>Interactive/hyperlinks</p> <ul style="list-style-type: none"> • teenagers can go straight to additional information <p>Can ask questions</p> <p><i>Disadvantages</i></p> <p>Library may not have facilities</p> <ul style="list-style-type: none"> • need to have screen/computer/appropriate software <p>Library may charge the student.</p> <p>Not everyone will visit the library</p> <p>Takes time to go to the library</p> <p>Costs money to travel to the library</p> <p>There is a mark available for a reasoned conclusion</p>	[8]	
	Total	[60]	

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