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**INFORMATION TECHNOLOGY**

**9626/13**

Paper 1 Theory

**May/June 2017**

MARK SCHEME

Maximum Mark: 90

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**Published**

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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Question	Answer	Marks																				
1	<table border="1"> <tr> <td>Boolean is a data type representing one of two states.</td> <td>✓</td> </tr> <tr> <td>Text fields cannot contain numbers.</td> <td></td> </tr> <tr> <td>Numeric fields cannot contain text.</td> <td>✓</td> </tr> <tr> <td>Integer is a numeric data type used for storing decimal numbers.</td> <td></td> </tr> <tr> <td>Date is a data type which can be used for storing images.</td> <td></td> </tr> <tr> <td>The real number data type is used for fields containing whole numbers only.</td> <td></td> </tr> <tr> <td>The numeric data type can be sub divided into different types of number.</td> <td>✓</td> </tr> <tr> <td>The alphanumeric data type can contain punctuation marks.</td> <td>✓</td> </tr> <tr> <td>The text data type is the easiest type of data to validate.</td> <td></td> </tr> <tr> <td>Currency must be stored as text.</td> <td></td> </tr> </table>	Boolean is a data type representing one of two states.	✓	Text fields cannot contain numbers.		Numeric fields cannot contain text.	✓	Integer is a numeric data type used for storing decimal numbers.		Date is a data type which can be used for storing images.		The real number data type is used for fields containing whole numbers only.		The numeric data type can be sub divided into different types of number.	✓	The alphanumeric data type can contain punctuation marks.	✓	The text data type is the easiest type of data to validate.		Currency must be stored as text.		4
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3	<p><b>Six from:</b></p> <p>Static information sources are carefully checked for accuracy... ...as once the data are used it is difficult to change There is a limited amount of information in a static information source... ...as soon as it is created it is difficult to have information added to it A dynamic data source can have information updated quite quickly The data in a dynamic data source is usually up to date/static data tends to go out of date quickly There can be many contributors to a dynamic data source such as a web site... ...so the information can be inaccurate.</p>	6

Question	Answer	Marks
4(a)	<p>This question to be marked as levels of response:</p> <p><b>Level 3 (7–8 marks)</b> Candidates will explain both the advantages and disadvantages of different input devices using relevant and appropriate examples. The information will be relevant, clear, organised and presented in a structured and coherent format. There may be a reasoned conclusion/opinion. Specialist terms will be used correctly and appropriately.</p> <p><b>Level 2 (4–6 marks)</b> Candidates will explain the advantages and disadvantages of input devices although development of some of the points will be limited to advantages or disadvantages, examples used will be for the most part relevant. For the most part, the information will be relevant and presented in a structured and coherent format. There may be a conclusion/opinion. Specialist terms will be used appropriately and for the most part correctly.</p> <p><b>Level 1 (1–3 marks)</b> Candidates will only give advantages/disadvantages of input devices, examples, if used, may lack relevance. Answers may be in the form of a list. There will be little or no use of specialist terms.</p> <p><b>Level 0 (0 marks)</b> Response with no valid content.</p> <p>Answers may include:</p> <p><i>The use of a keyboard to type in the amounts of money to be paid and recording details of the customers</i> The advantage of keyboards is that experienced users can enter details more quickly than other methods Difficulty of entering amounts other than selecting numbers using a mouse Disadvantage is that data is slow to enter compared with DDE</p> <p><i>Touch screen could be used to enter amounts or customer details</i> Quicker to enter data than using a mouse May cause screen to be stained and make viewing difficult</p> <p><i>RFID reader can be used to enter details from passport</i> Quicker than manually entering data Readers are expensive to buy initially</p> <p><i>Uses chip reader to read credit/debit cards</i> More reliable than reading magnetic stripe Quicker than typing in details from the card Contactless card readers speed up transactions as no PIN is required.</p>	8

Question	Answer	Marks
4(b)	<p><i>Evaluation based on:</i></p> <p><i>Advantages</i>  Hard disks tend to have higher storage capacities than SSDs  Hard disk drives still cost less per gigabyte than SSDs  HDDs last longer than SSDs ...  ...the NAND flash used in SSDs can only be used for a finite number of writes  The choice and availability of SSDs is still limited</p> <p><i>Disadvantages</i>  Hard Disk Drives are more susceptible to shock and damage...  ... as they consist of various moving parts  SSDs have faster data transfer rate  SSDs have quicker boot ups...  ...can have almost instantaneous data access...  ...HDDs data access speed is dependent on how close the data is to the read/write heads...  ...while all parts of the SSD can be accessed at once  SSDs use significantly less power at peak load than hard drives...  ...SSD's energy efficiency can deliver longer battery life in laptops  With no moving parts SSDs run at near silent operation...  ...unlike whirring hard disk drives.</p>	8

Question	Answer	Marks
5(a)	<p><b>COUNTIF(C4:C14,"&gt;40")</b></p> <p>COUNTIF() 1 mark  C4:C14, 1 mark  &gt;40 1 mark  ,"" 1 mark  ,</p>	4
5(b)	<p><b>=IF(C4&gt;40,C4-40,"")</b></p> <p>=IF() 1 mark  C4 1 mark  &gt;40 1 mark  ,C4-40 1 mark  ,"" 1 mark  ,</p>	5
5(c)	<p><b>=IF(C4&gt;40,D4*E4*1.5,"")</b></p> <p>=IF() 1 mark  C4&gt;40 1 mark  ,D4*E4 1 mark  *1.5 1 mark  ,"" 1 mark  ,</p>	5

Question	Answer	Marks
6(i)	<p><i>Phishing</i> <b>Three from:</b></p> <p>Involves using email to persuade people to divulge their personal information  The email may include a website URL, inviting the receiver to go to the site...  ...looks just like the actual bank's website but is a fake website  The email may ask customer to reply with their bank details  The email usually contains something that demands the target's immediate attention  Examples include "We confirm that you have signed up to our service. You will be charged \$2 a day unless you cancel your order on this URL: ..."  The website then asks them to enter their personal/financial information.</p>	<b>3</b>
6(ii)	<p><i>Vishing</i> <b>Three from:</b></p> <p>Victim receives a phone call to persuade him to divulge his personal information  Claims to be a representative of the bank and says...  ...that there has been some fraudulent activity on the customer's account  Often involves having the customer phone the bank  Fraudster's computer redirects phone call to own phone  Gives customer their bank details to get their confidence  Gets customer to log on to bank's site and enter their details to transfer money to their new account which has been set up  This account is actually the fraudster's own bank account.</p>	<b>3</b>

Question	Answer	Marks
7(a)	<p><b>Two from:</b></p> <p>It is the global system of interconnected computer networks            It uses the Internet protocol suite (TCP/IP) to link devices            It is a network of networks linked by an array of electronic, wireless, and optical networking technologies.</p>	<b>2</b>
7(b)	<p><b>Six from:</b></p> <p>Electronic Mail – email is a message that may contain text, files, images, or other attachments sent through a network to a specified individual or group of individuals</p> <p>World Wide Web – The World Wide Web is a system of Internet servers that support specially formatted HTML documents</p> <p>Video Conferencing Services – to conduct a conference between two or more participants at different sites by using computer networks to transmit audio and video data</p> <p>VoIP- Voice over Internet Protocol – the delivery of voice communications and multimedia sessions over Internet Protocol (IP) networks</p> <p>Instant messaging – to communicate via messages in real time over the internet</p> <p>Video streaming – video is sent to the viewer in real time</p> <p>File transfer – transmitting files over a computer network like the internet.</p>	<b>6</b>

Question	Answer	Marks
8	<p><b>Two marks each from:</b></p> <p><i>Trimming –</i> On the Timeline he would position the cursor over the in/start or out/end point When the trim handles appear drag the handle to trim the clip... ...action the trim</p> <p><i>Adding sound –</i> In the software he would open the video and audio files that he wants to merge Then drag the added files to the corresponding tracks on the timeline board The video file would be placed on the video track and the audio file on the audio track</p> <p><i>Adding captions –</i> Once he has chosen the style he wants, right-click it and select where he wants to place it He would select start of the video track/add to the end of the video track/add to the title track Then double-click the title frame in the preview window and type or paste the text.</p>	6

Question	Answer	Marks
9	<p><b>Six from:</b></p> <p><i>Benefits</i> Offer a much higher level of secure communication when compared to other remote methods of communication Every file coming into a computer or going out from a computer is encrypted... ... <u>meaning no unwanted user</u> will be able to open the files Can be used to work automatically as part of logging on</p> <p><i>Drawbacks</i> The company may not permit him to use other third party software on his computer in order to safeguard the integrity of their VPN connection The use of mobile devices to initiate access to the virtual private network can cause security issues... ...if Bruce's local wireless network is not secure Packet loss will be higher with the VPN and cause data to be lost and need to be retransmitted... ...increasing the time taken to receive documents The connection depends on the ISP and so performance can be variable Will need to install extra anti- malware tools to ensure his PC is clean in order to comply with VPN suppliers' requirements.</p> <p>Must have at least two of each to gain full marks.</p>	6



Question	Answer	Marks
10	<p><b>Four matched pairs from:</b></p> <p>Range check for the exam mark No mark should be less than 10 or greater than 100</p> <p>Lookup check for year Years should match 12 or 13</p> <p>Format check for date of birth All dates of birth must be two digits followed by a slash followed by two digits followed by a slash followed by four digits</p> <p>Consistency check on year with date of birth The date of birth can be checked to see that the year the student is in corresponds to that.</p>	8

Question	Answer	Marks
11(a)	<p><b>Three from:</b></p> <p>Software that is specially developed for a specific company/business It is made to accommodate that customer's particular preferences and needs Written by programmers to solve specific problems Owned by the business that commissions it.</p>	3
11(b)	<p><b>Three from:</b></p> <p>Software that is ready-made and already exists It is available to all businesses and companies It is owned by the company that created it Has to be adapted to fit the business that has purchased it.</p>	3

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12(i)	<p>Bar/column chart 1 mark</p> <p>The height of the bars represent the monetary value and the x axis is the category axis (the quarters) 1 mark</p> <p>Viewers can see comparisons by distinguishing the relative heights/lengths of the bars 1 mark</p>	3
12(ii)	<p>Line chart 1 mark</p> <p>Points are plotted, monetary value against year and these are joined together by straight lines 1 mark</p> <p>Useful for emphasising the trend over time since they allow a viewer to trace it by working backwards or interpolating 1 mark</p>	3