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**INFORMATION TECHNOLOGY**

**9626/01**

Paper 1 Theory

**For Examination from 2017**

SPECIMEN MARK SCHEME

**1 hour 45 minutes**

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**MAXIMUM MARK: 90**

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This document consists of **10** printed pages.

Question	Answer	Marks																				
1(a)	<p><b>Two</b> from:</p> <p>Data usually refers to raw data/unprocessed data Information is data that has been processed in such a way as to be meaningful... ...to the person who receives it Information is data that has structure and context</p>	<b>2</b>																				
1(b)	<p>Award 1 mark for each correct statement ticked.</p> <table border="1"> <tbody> <tr> <td>True and false are examples of Boolean data</td> <td>✓</td> </tr> <tr> <td>A field containing the value 253 would be a field containing text data</td> <td></td> </tr> <tr> <td>245.6 is an integer</td> <td></td> </tr> <tr> <td>All numbers are stored as decimals</td> <td></td> </tr> <tr> <td>'13cm' is an example of alphanumeric data</td> <td>✓</td> </tr> <tr> <td>An integer stored in a field is a form of numeric value</td> <td>✓</td> </tr> <tr> <td>Currency is a type of numeric data</td> <td>✓</td> </tr> <tr> <td>A real number is an integer which has already been used in a database</td> <td></td> </tr> <tr> <td>How many times a student has taken an exam would be stored as a Date/time data type</td> <td></td> </tr> <tr> <td>A percentage value is usually stored as text as it has a percentage sign</td> <td></td> </tr> </tbody> </table>	True and false are examples of Boolean data	✓	A field containing the value 253 would be a field containing text data		245.6 is an integer		All numbers are stored as decimals		'13cm' is an example of alphanumeric data	✓	An integer stored in a field is a form of numeric value	✓	Currency is a type of numeric data	✓	A real number is an integer which has already been used in a database		How many times a student has taken an exam would be stored as a Date/time data type		A percentage value is usually stored as text as it has a percentage sign		<b>4</b>
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2(b)	<p>Award 1 mark for correct statement ticked.</p> <table border="1"> <tbody> <tr> <td>Encoding data is a form of validation</td> <td></td> </tr> <tr> <td>Text and numbers are the only data types that can be encoded</td> <td></td> </tr> <tr> <td>Converting digital data to analogue data is a form of encoding data</td> <td>✓</td> </tr> <tr> <td>Encoding is done to deliberately conceal the content of the data</td> <td></td> </tr> </tbody> </table>	Encoding data is a form of validation		Text and numbers are the only data types that can be encoded		Converting digital data to analogue data is a form of encoding data	✓	Encoding is done to deliberately conceal the content of the data		<b>1</b>
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3(a)	Award 1 mark for each correct answer up to a maximum of 3.  <b>Three</b> from:  Application software is a set of one or more programs designed to carry out operations for a specific application... ...other than system maintenance functions Types of application software include spreadsheet, database, DTP, word processing software (must have at least two)	3
3(b)	Award 1 mark for each correct answer up to a maximum of 3.  <b>Three</b> from:  System software refers to the operating system and all utility programs that manage computer resources System software includes BIOS, compilers, interpreters, system utilities (must have two) System software is a type of computer program that is designed to run a computer's hardware and application programs System software is the interface between the hardware and user applications	3

Question	Answer	Marks
4	Award 1 mark for each correct answer up to a maximum of 3.  <b>Three</b> from:  Provides an interface that does not need the support of a device Gesture interfaces are graphical user interfaces which accept input in a form of hand gestures It is a virtual world to which the user is connected digitally Can point a finger at the computer screen so that the cursor will move accordingly	3

Question	Answer	Marks
5(a)	<p>Award 1 mark for each correct answer up to a maximum of 2.</p> <p><b>Two</b> from:</p> <p>A cell reference identifies the cell that is being referred to  A cell reference consists of the column letter and row number that intersect at the cell's location  For example cell C1 is in column C and in row 1</p>	<b>2</b>
5(b)	<p>Award 1 mark for each correct answer up to a maximum of 4.</p> <p><b>Four</b> from:</p> <p>A formula is statement written by the user to perform a calculation  Formulae can be as simple or as complex as the user wants  A function is also a formula, but is predefined/comes with the spreadsheet software. Instead of having to accurately type out the details of the formula, the function acts as a shortcut to carry it out.</p> <p>Allow up to 1 mark for an example from the spreadsheet.  For example =SUM is a function whereas =C2*D2 is a formula</p>	<b>4</b>
5(c)	<p><b>=CONCATENATE(A2," ",B2)</b>  1 mark for CONCATENATE  1 mark for A2  1 mark for " "  1 mark for B2</p>	<b>4</b>
5(d)	<p>Award 1 mark for each correct answer up to a maximum of 4.</p> <p><b>Four</b> from:</p> <p>Use conditional formatting  Highlight E2 to E5  Select conditional formatting  Select 'greater than'  Type in 500  Select colour of font/background</p>	<b>4</b>
5(e)	<p>Award 1 mark for each correct answer up to a maximum of 3.</p> <p><b>Three</b> from:</p> <p>Absolute cell referencing is used when formulae are replicated  It is used to keep cell references constant as they are replicated  If it was used in column E the weekly wage for every worker would remain the same  Here the wage needs to be calculated separately for each worker and the values do need to change</p>	<b>3</b>

Question	Answer	Marks
5(f)	<p>Award 1 mark for each correct answer up to a maximum of 3.</p> <p><b>Three</b> from:</p> <p>If the plane crashed in real life the pilot might die whereas nothing would happen to him/her in a simulator            If the plane crashed in real life the plane would cost a lot to replace whereas nothing would happen to the simulator            Extreme weather conditions can be made to order in a simulator but you might have to wait a long time for them to happen in real life            The cost of running a simulator is cheaper than the cost of fuel in a real plane</p>	<b>3</b>
6(a)	<p>Award 1 mark.</p> <p>Name of validation check:</p> <p>Lookup check</p> <p>Award 1 mark for each correct answer up to a maximum of 3.</p> <p><b>Three</b> from:</p> <p>A table of the three models would be stored            Data is entered into a cell with the rule            Data is compared to entries in the table            If data matches an entry it is allowed/If data entered does not match any of the entries in the table it is rejected</p>	<b>4</b>
6(b)	<p>Award 1 mark for each correct answer up to a maximum of 4.</p> <p><b>Four</b> from:</p> <p>Rule could be that price must match model number            If the model number is 1273C3 price must be \$300            If the model number is 1273C6 price must be \$400            If the model number is 1275C3 price must be \$350            If the model number is 1275C6 price must be \$450            If the model number is 1278C3 price must be \$500            If the model number is 1278C6 price must be \$600</p> <p>Rule could be that memory must match model number            If model number ends in 3 memory must be 32            If model number ends in 6 memory must be 64</p>	<b>4</b>

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6(c)	<p>Award 1 mark for each correct answer up to a maximum of 4.</p> <p><b>Four</b> from:</p> <p>Load word processing/database software            Make sure the database/word processed document has been saved with an appropriate file name            Link the document to the database            Type in the contents of the letter            Add address block            Appropriate mention of insertion of merged field, e.g. in the space to the right of 'Dear', choose insert merge field</p> <p>Award 1 mark for each correct answer up to a maximum of 2.</p> <p><b>Two</b> from:</p> <p>select the Customer field            select edit recipient list            type in filter condition/select filter condition            select finish and merge</p>	<b>6</b>																							
6(d)	<table border="1"> <thead> <tr> <th>Model</th> <th>Price (\$)</th> <th>Memory (GB)</th> <th>1 mark, 0 marks if there are additional/missing headings</th> </tr> </thead> <tbody> <tr> <td>1273C3</td> <td>300</td> <td>32</td> <td rowspan="6">3 marks, subtract 1 mark for each additional/missing record down to a minimum of 0 marks (do not award negative marks)</td> </tr> <tr> <td>1273C6</td> <td>400</td> <td>64</td> </tr> <tr> <td>1275C3</td> <td>350</td> <td>32</td> </tr> <tr> <td>1275C6</td> <td>450</td> <td>64</td> </tr> <tr> <td>1278C3</td> <td>500</td> <td>32</td> </tr> <tr> <td>1278C6</td> <td>600</td> <td>64</td> </tr> </tbody> </table>	Model	Price (\$)	Memory (GB)	1 mark, 0 marks if there are additional/missing headings	1273C3	300	32	3 marks, subtract 1 mark for each additional/missing record down to a minimum of 0 marks (do not award negative marks)	1273C6	400	64	1275C3	350	32	1275C6	450	64	1278C3	500	32	1278C6	600	64	<b>4</b>
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6(e)	<p>Award 1 mark for each correct answer up to a maximum of 2.</p> <p><b>Two</b> from:</p> <p>Data is not repeated/no redundant data improving data integrity and reducing errors            Data is not repeated/no redundant data saving storage space            Reinforces referential integrity</p>	<b>2</b>																							

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7(a)	<p>Award 1 mark for each correct answer up to a maximum of 2.</p> <p><b>Two</b> from:</p> <p>Use a word processor (to produce a newsletter)            Use a desktop publishing package (to produce a newsletter)            Use a web authoring package (to produce web pages to show the events)            Use presentation software (to produce a slide show to show the events)</p>	<b>2</b>

Question	Answer	Marks
7(b)	<p>Award 1 mark for each correct answer up to a maximum of 6.</p> <p>Only the <b>two</b> packages named in <b>7(a)</b> can be compared.</p> <p><b>Six</b> from:</p> <p><i>Word processor versus DTP</i>  DTP software includes the key elements involved in producing these products...  ... such as typesetting, page layout and graphic design  DTP software is a little more difficult to use than regular word processing software because there are so many different options to consider  DTP is used by graphic designers  Arrangement of the text on the word processing page is largely linear  Word processing has few options to set text precisely where the user wants  DTP packages have a wider selection of import and output options for various forms of content  DTP packages are better able to combine text and graphics in a single document</p> <p><i>Presentation vs DTP/WP</i>  You can use video/animations in presentations  You can have sound in presentations  Ink/paper is more expensive than slideshow presentation  Easier/less costly to update  Cannot be sure everybody would see presentation/can deliver newsletter to every home/might have presentation at an inconvenient time for some parents  Producing presentation would take longer than WP document  You have to pay someone to deliver hard copies</p> <p><i>Web pages vs DTP/WP</i>  You can use video/animations in web pages  You can have sound on web pages  Ink/paper is more expensive than web pages  Easier/less costly to update  Cannot be sure everybody would see website/can deliver newsletter to every home  Producing web pages would take longer than WP document  You may have to pay someone to deliver hard copies  You have to pay for an ISP  You may have to pay extra to host a website</p> <p><i>Web pages vs presentation</i>  With presentation can know exactly which parents have been informed  With web pages have to pay for an ISP  You may have to pay extra to host a website  Presentation is easier/less costly to update  Less information on a slide than a web page  With web pages parents can respond interactively  Fewer skills needed for presentation</p>	<b>6</b>

Question	Answer	Marks
8(a)	<p>Award a maximum of 2 marks per answer, up to a maximum of three types of malware.</p> <p>A Trojan Horse is generally a non-self-replicating program containing malicious code that, when executed, carries out actions, typically causing loss of data Malicious programs are classified as Trojans if they do not attempt to inject themselves into other files... ...or otherwise propagate themselves</p> <p>A worm is a computer program that replicates itself in order to spread to other computers It uses a computer network to spread itself Unlike a computer virus, it does not need to attach itself to an existing program</p> <p>Spyware is software that aids in gathering information about a person or organisation without their knowledge It may send such information to another entity without the consumer's consent, asserts control over a computer without the consumer's knowledge It detects key presses of the computer user</p> <p>Adware is a form of spyware that collects information about the user in order to display advertisements in the Web browser Some applications that contain adware track the user's internet surfing habits in order to serve ads related to them</p> <p>A rootkit is a type of software designed to hide the fact that an operating system has been compromised... ...sometimes by replacing vital executables Rootkits allow viruses and malware to "hide in plain sight" by disguising as necessary files that antivirus software will overlook Rootkits themselves are not harmful – they are simply used to hide malware, bots and worms</p> <p>Malicious bots are self-propagating malware designed to infect a host and connect back to a central server or servers The servers act as a command and control (C&amp;C) centre for an entire network of compromised devices Hackers can launch flood-type attacks against their target(s) In addition to the worm-like ability to self-propagate, bots can act as spyware</p> <p>Ransomware is a type of malware which restricts access to the computer system that it infects It demands a ransom paid to the creator(s) of the malware in order for the restriction to be removed Some forms of ransomware encrypt files on the system's hard drive</p>	6



Question	Answer	Marks
8(b)	<p>To be marked as a level of response:</p> <p><b>Level 3 (7–8 marks)</b> Candidates will address both aspects of the question and discuss/consider different reasons as to why not all people use the internet for communication. The issues raised will be justified. There will be a reasoned conclusion. The information will be relevant, clear, organised and presented in a structured and coherent format.</p> <p><b>Level 2 (4–6 marks)</b> Candidates will address both aspects of the question and discuss/consider different uses, although development of some of the points will be limited to one aspect of the question. There will be a conclusion. For the most part the information will be relevant and presented in a structured and coherent format.</p> <p><b>Level 1 (1–3 marks)</b> Candidates may only address one aspect, and give basic reasons. Answers may be simplistic with little or no relevance.</p> <p><b>Level 0 (0 marks)</b> Response with no valid comment.</p> <p><b>Examples:</b></p> <p>Why people use the internet:</p> <p>Individuals send emails to communicate with others to gain a reply speedily Social networking to communicate with friends and family members Communication – between companies using IM, VOIP and web/audio/video conferencing because cheaper than organising face-to-face meetings News services – to find the latest news or sports scores</p> <p>Why people do not use the internet:</p> <p>Some may be reluctant to send emails because of malware, speed of reply, impersonal nature People may not want their children to use the internet because of esafety, and children could become addicted and not do their work Those that do not use the internet are mainly those that suffer as the result of the digital divide People and regions that do not have access to aspects of modern technology, or those that have restricted access Can be people who live in rural areas Can be people who are uneducated Can be people who are poor Can be people who are older who do not wish to learn to use it Some might prefer face-to-face contact</p>	8

Question	Answer	Marks
8(b)	<p>Can be people who reside in less industrially developed nations            Can be people who have lower-performance computers...            ...lower-speed wireless connections...            ...lower-priced connections such as dial-up...            ...and limited access to subscription-based content            Smaller, traditional companies may be reluctant because of cost/security issues            Many people prefer to read hard copies of newspapers as they can take a newspaper with them and read it anywhere</p>	
8(c)	<p>Award 1 mark for each correct answer up to a maximum of 6.</p> <p><b>Six</b> from:</p> <p>The internet is an international network of networks of computers            The internet consists of hardware            The World Wide Web makes use of hypertext to access the various forms of information available on the internet            The World Wide Web is the system used to access the internet            The web is accessed through browsers            The World Wide Web is not the only service provided on the internet            Other uses of the internet include email and instant messaging</p>	<b>6</b>

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9	<p>Award 1 mark for each correct answer up to a maximum of 4.</p> <p><b>Four</b> from:</p> <p>The compiler's conversion is made just once and after that the same binary code can be distributed to the user's machines where it can be executed without further translation thereby saving time compared to an interpreted program            Whereas an interpreted program is distributed as source code so it needs to be translated in each final machine, which takes more time than using compiled code...            ...however this does make the program distribution independent of the machine's architecture whereas the compiled version will only run on machines with a specific processor's architecture, thus making it less portable than interpreted code            Compiled object code makes it easier to protect intellectual property as the machine code is difficult to understand whereas interpreted code can easily be read and copied by humans            It generally takes longer to run a program under an interpreter than to run the compiled code because the interpreter must analyse each statement in the program each time it is executed...            ...but it can take less time to interpret it than the total time required to compile and run it            Compiler generates the error report after the translation of the entire page while an interpreter will stop the translation after it gets the first error making it easier to debug            An interpreter uses less memory as source code only has to be present one line at a time in memory whereas with a compiler all the execution code needs to be loaded into memory</p>	<b>4</b>