Suggested answers to the end of Chapter structured question from:

Information Technology for CSEC Examinations

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Chapter 1

Pages	Question	Key	Mark
	a) i)	Mobile devices	1
	ii)	Any two from: netbook [1], notebooks [1], smartphones [1], tablets [1] or games consoles [1].	2
	b)	Any four from: input devices [1], central processing [1], primary memory (RAM and ROM) [1], secondary storage [1] and output device [1]. Also accept base unit [1] , monitor [1], keyboard [1], mouse [1], accept microphone and speaker.	4
	c) i)	Any one from: external hard disk drive [1], external SSD [1], USB memory stick [1], SD card [1], magnetic tape unit [1].	1
	ii)	Plotter [1] or large format printer [1].	1
	iii)	Scanner [1]. Accept digital camera.	1
	iv)	Any one from: touch screen [1], light pen and monitor [1] or stylus and touchpad/graphic pad [1].	1
	d)	i) A is an operating system such as Windows 10, Linux Mint, MacOS manages the computer hardware on behalf of the user [1]. B are system utilities. Examples of system utilities include; disk defragmenters and anti-virus software, they keep the computer running efficiently and smoothly [1]. ii) systems software [1].	3
	e)	i) General purpose applications such as word processing, spreadsheets and databases allow the user to carry out various tasks [1]. For example, a word processing program can be used for letters, memos, stories, invoices etc. [1]. Special purpose programs such as payroll and photo editing [1] are only suitable for a specific task [1]. ii) General purpose: word processing, spreadsheets and databases [1]. Special purpose programs such as payroll or photo editing[1].	6
		TOTAL	20

Chapter 2

Pages	Question	Key	Mark
	a) i)	Either U [1] or X [1]	1
	ii)	Either V [1] or W [1]	1
	iii)	Either U [1] or V [1]	1
	iv)	W [1]	1
	v)	W [1]	1
	b) i)	Hand written signature or any valid alternative [1].	1
	ii)	Bar code [1].	1
	iii)	Delivery information or any valid alternative [1].	1
	c)	Any three from: For information on a website to be reliable it must be authentic [1], current [1], relevant and unbiased [1]. The web page is not current [1] and may be biased because OSD is trying to sell products [1].	3
	d) i)	validation and verification [1].	1
	ii)	Any three from: range check [1], reasonableness check [1], data type check [1], consistency check [1], presence check [1], format check[1] or length check [1].	3
	iii)	A range check ensures that the value entered falls between two pre-defined values. For example, minimum quantity may be 5 and the maximum quantity 50 [1]. The range check will warn the user if a value is entered outside these values and request an updated value be entered. This type of validation check detects simple typing mistakes 66 instead of 6 for example [1].	2
	e) i)	Serial access [1]. (also accept direct access if the answer goes on to describe how the files are stored on the disk drive)	1
	ii)	In serial access files the data is read from the file in the order it was written to the file [1]. The updated data is then written back to the file in the same order. This makes serial access efficient for small files like purchase orders and invoices [1]. (also accept the files are stored on the disk drive using an index which uses the name of the file to look up the location of the file on the disk so that it can be accessed directly.)	2
		TOTAL	20

Chapter 3

Pages	Question	Key	Mark
	a) i)	A computer network is two or more computer devices connected together to share files and resources [1].	1
	ii)	A Local Area Network is a network of computer devices in a small geographical area such as an office block [1]. An intranet is a closed network protected by usernames and passwords for securely managing the sharing of files and resources [1]. A LAN can be used as an intranet by adding a layer of security.	2
	iii)	The doctors will need to set up a LAN to share files and resources such as printers and files [1]. A LAN will allow all computers on the network to use the same Internet connection [1]. For confidential files like patient records the extra security measures of an intranet will be required [1] so that only authorised staff, with a username and password, can access confidential files.	3
	b) i)	Extranet [1].	1
	ii)	The medical centre will have a web server connected to the Internet [1]. Patients will use a web browser and Internet connection to visit the medical centre's web site [1]. They will be able to view general public information about the medical centre. To view their personal records the patient will have to log into the Extranet using their unique username and password [1].	3
	iii)	The Internet is a network that connects billions of computer devices together [1]. Any computer device connected to the Internet can communicate with any other device on the Internet. The Internet allows the patient's computer to communicate with the medical centre's computer system [1].	2
	c) i)	Routers direct network traffic between different networks [1]. For example, the medical centre's LAN and the Internet [1].	2
	ii)	Fibre optic cable provides wide bandwidth [1] and so provides fast data transfer [1].	2
	iii)	A hot spot is an area where the public can wirelessly connect to the Internet [1]. Cafes and hotels often provide a wi-fi hotspot to enable any clients with a suitable computer device to connect to the Internet [1].	2
	iv)	If an organisation wants to provide a hotspot they need a wireless router [1] and a reliable Internet connection [1].	2
		TOTAL	20

Chapter 4

Pages	Question	Key	Mark
	a) i)	Vulnerability [1], attack [1]	2
	ii)	Examples of vulnerability; unlocked door to the area containing computers may allow unauthorised access [1] or connecting a computer to the Internet with no firewall makes the computer system vulnerable to criminal attack [1]. Examples of an attack are: disgruntled employee encrypting important company files [1] or fraudsters demanding a ransom to prevent the release of embarrassing private photographs onto social media [1].	4
	b) i)	Creating a safety backup of all important files [1].	1
	ii)	Any 5 from: On a daily or weekly basis [1], the school should make a backup copy of all important files [1]. The backup copy should be stored on a removable media such as magnetic tape or external hard disk drive [1]. The backup should be stored in a fireproof, waterproof cabinet away from the computer room. [1] If the computer systems are destroyed new computers can be quickly purchased [1]. System software and the applications programs can be reinstalled [1]. Finally, the Backup media can be used to restore all the schools files [1].	5
	c) i)	Malware is malicious software designed to disrupt, damage, or gain unauthorized access to a computer system [1].	1
	ii)	Two from: ransomware [1], spyware [1], virus [1], trojan [1], worm [1].	2
	iii)	Any four from: Malware can enter a computer system when physical storage devices such as external had disk [1], CD [1], DVD [1], USB pen-drive [1] or SD memory card [1] are attached to the computer. Malware can also infect a computer over a network [1] for example by downloading an infected file or visiting malicious websites.	4
	iv)	Any three from: students may lose their files [1], they may have confidential personal data stolen [1], they may have usernames and passwords stolen [1]. These can lead to identity theft. The effects on the school may include; theft of examination scripts [1], unauthorised access to confidential staff records [1] or encryption of files requiring a ransom to be paid [1]. Or any valid alternatives.	3
	v)	Any three from; regular system updates [1], up-to-date anti-virus software installed and regularly run [1], a firewall installed [1], staff and students trained in good personal security practices [1]. Or any valid alternatives.	3
		TOTAL	25

Chapter 5

Pages	Question	Key	Mark
	a) i)	Centre [1].	1
	ii)	Underline [1].	1
	b) i)	It is good practice to spell check a document to ensure the document does not contain any incorrectly spelt words [1] and to build up a dictionary of local dialect words [1]. Or any valid alternatives.	2
	ii)	If required select the section of text to be checked or allow the whole document to be checked. Check the correct language is being used Try: Review > Language > Set Proofing Language or Tools > Language [1]. Select the spell check and grammar tool Try: Review > Spelling & Grammar or Tools > Spelling and Grammar and follow the instructions [1].	2
	c)	Any four from: Insert the USB flash drive into an available USB port [1]. In the word processing program position the cursor in the correct position [1] and select the insert picture tool Try: Insert > Picture/Image [1]. Browse to the flash drive and select the logo image [1]. The logo is inserted. With the logo selected us the right align tool [1].	4
	d)	Any ten from: Mail merge is the facility to produce a bulk mailing [1]. Mail merge allows a set of similar but personalized letters to be easily created [1]. A template document is used [1] in which placeholder fields are included [1]. A data source file is needed [1] that contains all the data to personalize each letter, this may be a table in a word processing document [1], a workbook in a spreadsheet [1] or a table in a database [1]. Typically, the data file contains the title, name and address of the recipient [1]. The actual mail merge takes the template document and the data file and inserts the information from the data file into the correct position in the template file [1] so creating a resulting document containing all the many personalized letters ready for printing [1]. The steps in mail merge are; create the template document, create the data file, associate the data file and template document and insert the placeholder fields, perform the mail merge, check and print the personalized letters [1].	10
		TOTAL	20

Chapter 6 Paper

Pages	Question	Key	Mark
	a)	Any three from: reason for site, what is the purpose of the site; to inform, entertain, collect information [2]. Intended audience, who is going to be the main viewer of the site; teenagers, business people, hobbyists [2]. Number of pages, how many pages will be needed to contain all the content [2]. Content, what information is the website going to contain [2]. The layout, how the elements text, pictures, video, navigation tools are located on the web pages [2]. Hyperlinks. How many, and what type, of hyperlinks will be needed [2].	6
	b) i)	A hyperlink is a URL attached to text or an image such that when the hyperlink is clicked the web resource given by the URL is displayed [1].	1
	ii)	A hyperlink can also link to an email address [1] or to different location in a long web page [1]. E.g. a Back to Top link	2
	iii)	Any two from; text [1], images [1], video [1], interactive content [1], audio [1].	2
	iv)	To check every hyperlink works regularly conduct thorough tests [1]. For each web page in the website create a list of all the hyperlinks [1]. Check every hyperlink on the list in order before moving onto the test the hyperlinks on the next page. Check every webpage in the website. Repeat this test on a regular basis [1].	3
	c) i)	A test audience is a selection of people who use the website looking for errors and reporting any errors found [1].	1
	ii)	Any five from: a test audience might check content is current [1], unbiased [1], relevant [1] and views well on a range of devices [1], different screen size [1], different web browsers [1] and different Internet connection speeds[1].	5
		TOTAL	20

Chapter 7

<table>
<tr><th>Pages</th><th>Question</th><th>Key</th><th>Mark</th></tr>
<tr><td></td><td>a)</td><td>The number of columns is 10 but only 9 are used [1].</td><td>1</td></tr>
<tr><td></td><td>b) i)</td><td>Cell A5 contains text [1].</td><td>1</td></tr>
<tr><td></td><td>ii)</td><td>Cell B5 contains a value (a number) [1].</td><td>1</td></tr>
<tr><td></td><td>iii)</td><td>Cell G5 contains a formula [1].</td><td>1</td></tr>
<tr><td></td><td>c)</td><td>Merge cells [1].</td><td>1</td></tr>
<tr><td></td><td>d)</td><td>=B5+C5+D5 [2 marks for correct answer, 1 mark for partially correct answer].</td><td>2</td></tr>
<tr><td></td><td>e)</td><td>=G5/(G5+H5) answer 0.88 formatted as a percentage 88.00% [2 marks for correct answer, 1 mark for partially correct answer].</td><td>2</td></tr>
<tr><td></td><td>f)</td><td>Percentage, 2 decimal places and right aligned [1].</td><td>1</td></tr>
<tr><td></td><td>g)</td><td>Function is average the formula would be =AVERAGE(I5:I8) [2 marks for correct answer, 1 mark for partially correct answer].</td><td>2</td></tr>
<tr><td></td><td>h)</td><td>Relative addressing refers to the idea that cells are referenced relative to each other [1]. This means that if a formula using relative addressing is copied or moved the formula will be automatically be corrected [1].
<table>
<tr><td></td><td>A</td><td>B</td><td>C</td><td>D</td></tr>
<tr><td>1</td><td>20</td><td>30</td><td>=A1+B1</td><td></td></tr>
<tr><td>2</td><td>25</td><td>5</td><td></td><td></td></tr>
<tr><td>3</td><td>40</td><td>15</td><td></td><td></td></tr>
<tr><td>4</td><td></td><td></td><td></td><td></td></tr>
</table>
This example uses relative addressing in the formula in cell C1, that is =A1+B1. If this formula is copied down into cell C2 the formula is automatically corrected to =A2+B2 because of relative addressing. The formula is actually saying take the contents of the cell two to the left and add it to the contents of the cell one to the left [1]. Relative addressing is usually what we want.
[1 mark for clear explanation of relative addressing].

In some cases, we don’t want the formula, or part of the formula to be updated. In this case we use absolute addressing [1]. To include an absolute address, we us the $ sign in-front of the cell address we don’t want to change [1].
<table>
<tr><td></td><td>A</td><td>B</td><td>C</td><td>D</td></tr>
<tr><td>1</td><td>20</td><td>30</td><td>=$A$1+$B$1</td><td></td></tr>
<tr><td>2</td><td>25</td><td>5</td><td></td><td></td></tr>
<tr><td>3</td><td>40</td><td>15</td><td></td><td></td></tr>
<tr><td>4</td><td></td><td></td><td></td><td></td></tr>
</table>
Now when the contents of cell C1 is copied to cell C2 the formula does not change and remains =$A$1+$B$1 [1].
It is possible to mix relative addressing in one formula. =A1+$B$1 in cell C1, when copied to cell C2 becomes =A2+$B$1 [1].
[2 marks for a clear explanation of relative addressing].</td><td>10</td></tr>
<tr><td></td><td>i)</td><td>A pie chart is most suitable because pie charts are used to display the contribution of each part to the total. Whereas column and bar charts are used for comparing a series of values and line graphs are used to compare changes over a period of time.</td><td>3</td></tr>
<tr><td></td><td></td><td>TOTAL</td><td>25</td></tr>
</table>

Chapter 8

<table>
<tr><td>Pages</td><td>Question</td><td>Key</td><td>Mark</td></tr>
<tr><td></td><td>a)</td><td><table><tr><td>Fieldname</td><td>Data type</td></tr><tr><td>AppID</td><td>Text</td></tr><tr><td>InvestmentAmt</td><td>Currency</td></tr><tr><td>Duration</td><td>Numeric</td></tr><tr><td>ForeignStaff</td><td>Logical or Boolean or yes/no</td></tr></table></td><td>4</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td>b)</td><td>Ccode [1].</td><td>1</td></tr>
<tr><td></td><td>c)</td><td>AppID [1].</td><td>1</td></tr>
<tr><td></td><td>d)</td><td>Foreign Key [1].</td><td>1</td></tr>
<tr><td></td><td>e) i)</td><td>Select to add the APPLICATIONS table. Select ProjectType and InvestmentAmt fields [1]. Add criteria >2000000 to the InvestmentAmt field [1].</td><td>2</td></tr>
<tr><td></td><td>ii)</td><td>Select to add both tables. Select the Cname from the COUNTRY table and ForeignStaff from the APPLICATIONS table [1]. Add criteria Yes, or check the box, to the ForeignStaff field [1].</td><td>2</td></tr>
<tr><td></td><td>iii)</td><td>Select to add the APPLICATIONS table. Select InvestmentAmt fields [1]. Add a new calculated field in Microsoft Access ApplicationFee:[InvestmentAmt]* 0.5, in LibreOffice Base “InvestmentAmt” * 0.5 [1]</td><td>2</td></tr>
<tr><td></td><td>iv)</td><td>Select to add both tables. Select the Cname from the COUNTRY table and ProjectType [1] and InvestmentAmt from the APPLICATIONS table [1].</td><td>2</td></tr>
<tr><td></td><td>f)</td><td>Grouping is a useful feature when creating reports. Grouping allows records with the same value in a particular field to be gathered together in one section of the report [1]. For example in the above table we might want to create a report with all the Mining projects together and all the Retail projects together etc [1]. This is Grouping on ProjectType. ProjectType and ForeignStaff could be used as a grouping field [1]. If the tables are linked Ccode and Cname could also be used as a grouping field [1].</td><td>4</td></tr>
<tr><td></td><td>g)</td><td>A form and sub-form combination [1].</td><td>1</td></tr>
<tr><td></td><td></td><td>TOTAL</td><td>20</td></tr>
</table>

Chapter 9

Pages	Question	Key	Mark
	a) i)	Write 'A program to calculate the interest payable on a loan at 7%' Write 'Please give the loan principal amount' [1 mark for prompt] Read the principal amount [1 mark for input] Calculate the interest payable = principal amount * 0.07 [1] Write 'The interest payable is ' Write interest payable [1 mark for output result]	4
	ii)	Write 'A simple program to sum 12 months of candle sales and total profit.' total = 0 Do the following 12 times Write 'Please give the next monthly sales number ' Read the number total = total + number Calculate the profit = total * 15 * 0.2 Write 'The total number of candles sold is ' Write the total Write 'The total profit is $ ' Write the profit [lose 1 mark for each mistake that stops the algorithm working].	4
	iii)	Write 'A program to calculate profit less the interest payment ' Write 'Please give the total annual profit' Read the profit Write 'Please give the interest payable' Read the interest payable Calculate the profit or loss = profit – interest payable Write 'The profit or loss for this year is ' Write profit or loss [lose 1 mark for each mistake that stops the algorithm working].	2
	b) i)	Integer [1].	1
	ii)	real or float [1].	1
	iii)	Text [1].	1
	iv)	logical or Boolean or Yes/No [1].	1
	c)	Any five from; Define the problem [1], propose and evaluate solutions [1], determine the best solution [1], develop the algorithm [1], represent the algorithm as pseudocode [1] or flowchart [1], test and validate the solution [1]. The divide and conquer approach to problem solving involves breaking down a complex problem into simpler sub problems and then breaking each of those problems down into even simpler problems. This is repeated until we have a set of simple problems that can be solved [1].	6
		TOTAL	20

Chapter 10

Pages	Question	Key	Mark
	a)	Low level language such as machine code and assembler are machine dependent and not easy for humans to understand [1]. High level languages such as Pascal and Python are machine independent, are easy for humans to understand and can easily translated into a machine code using a compiler or interpreter [1].	2
	b) i)	Debugging [1].	1
	ii)	The error can't be a syntax error because the program compiled correctly [1]. A runtime error is likely to cause the program to crash so the most likely error is a logical error [1]. For example, a logic error may be caused by the use of a >= sign rather than a <= [1].	3
	c) i)	Any four from: meaningful variable and constant names [1], extensive use of comments [1], good use of indentation [1], effective use of white spaces [1], programmer notes [1].	4
	ii)	Any four from: the use of meaningful variable and constant names help Alexia because they are understandable English words [1], extensive use of comments help Alexia to understand what the original programmer was intending [1], good use of indentation to show the structure of the program [1], effective use of white spaces splits the code into logical parts [1], programmer notes explain why the program was written in a particular way [1].	4

	d)	Progam language may vary. Correct start and declaration of variables [1], prompt for input [1], get input [1], correct use of IF [1], correct output [1], correct program [1].
		PROGRAM test;
		VAR
		topUpAmount : REAL;
		BEGIN
		WRITELN ('A simple program to calculate top up amount');
		WRITELN ('Please give the top up amount ');
		READ (topUpAmount);
		IF (topUpAmopunt >=100) THEN
		BEGIN
		topUpAmount = topUpAmount * 1.2;
		END.
		WRITELN (topUpAmount);
		END.
			6

		TOTAL	20