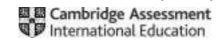**Published**

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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This document consists of **9** printed pages.

Question	Answer		Marks
1	Duplication of data is avoided saving storage space.	✓	**4**
	Every individual mistake in the database has to be manually corrected in all tables.		
	It is easier to produce cross tabular-reports in relational databases than with flat file databases.	✓	
	The only two possible relationships are one-to-one and many-to-one.		
	It is impossible to make mistakes when entering data into a relational database.		
	Tables can be linked using a key field.	✓	
	There must be at least three tables in a relational database.		
	Primary keys are unnecessary whereas you must have them with flat file databases.		
	Relational databases cannot store as much information as flat file databases.		
	Referential integrity helps to prevent database users entering inconsistent data.	✓	

Question	Answer		Marks
2	The internet is fully policed and safe.		**4**
	Information on the world wide web tends to be up to date.	✓	
	The world wide web has vast amounts of information.	✓	
	All information on the world wide web is unbiased.		
	All websites are accurate.		
	Lack of expertise in using search engines can lead to inefficient searching.	✓	
	It is more difficult to plagiarise information using the world wide web than copying out of a hard copy book.		
	There is a danger of accessing inappropriate websites.	✓	
	The internet is smaller than an intranet.		
	The world wide web and the internet are the same thing.		

Question	Answer	Marks
3(a)	***Five** from:* Asymmetric encryption is often referred to as public key encryption The public key is used to encrypt the data… …the corresponding private/secret key is used to decrypt the data The public key is published to everyone… …but the private key is kept secret Anyone with a copy of the public key can encrypt information… …but only the private key holder can read it It is not possible to deduce the private key from the public key.	**5**
3(b)	***Three** from:* Symmetric encryption only uses a single private/secret key This private/secret key must be shared and kept private by both the sender and the receiver This private/secret key is used for both encryption and decryption To use symmetric encryption sender and receiver must securely share a key before sending/receiving a message.	**3**

Question	Answer	Marks
4	This question to be marked as levels of response: **Level 3** **7–8 marks** Candidates will explain both the advantages and disadvantages of a range of different types of software 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. **Level 2** **4–6 marks** Candidates will explain the advantages and disadvantages of more than one type of software. 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. **Level 1** **1–3 marks** Candidates may only give basic advantages/disadvantages of one type of software. Answers may be simplistic with little or no relevance. Answers may be in the form of a list. There will be little or no use of specialist terms. **Level 0** **0 marks** Response with no valid content. Answers may include: Using word processing it is easier to edit documents ready for inclusion in the website compared to text editors, spreadsheets and databases Using word processing it is easier to format documents ready for inclusion in the website compared to text editors, spreadsheets and databases Using word processing it is more difficult to enter statistics and manipulate these compared to spreadsheets and databases Easier to calculate statistics with a spreadsheet than using database software Can produce charts to show sales growth with a spreadsheet easier than using a database Databases could be used to store and process sales figures easier than a spreadsheet Easier to query a database than using a spreadsheet Easier to produce reports with a database than a spreadsheet With a text editor formatting is not lost when converting to HTML Using web authoring package is easier to produce a blog than using text editor… …easier to use than text editor as functions are provided.	8

Question	Answer	Marks
5	*Six* from: The digital divide can exist between those living in rural areas and those living in urban areas There may be a lack of/expensive to install infrastructure in rural areas The quality of connection to the internet may be poor in rural areas The digital divide can exist between people from different economic classes/rich and poor The poor cannot afford to buy computers/hardware/software/equipment Poor cannot afford the education/training needed to learn about the new technology Lower-income and minority groups are buying smartphones but there are rising costs of data plans Disabilities of potential internet users constitute another type of divide Users with poor hand coordination will not be able to manipulate keyboards/input devices The digital divide can exist between the educated and uneducated The less well educated may not have the skills, knowledge and abilities to use the technologies The digital divide can exist between old and young people Young people have grown up with the technology/older people may feel they are too old/unwilling to learn about new technology/do not know how to use it The digital divide can exist between developed and developing countries The quality of connection to the internet may be poor in developing countries The price of connection to the internet may be high in developing countries In some less well developed countries the population has limited access to digital services.	6

Question	Answer	Marks
6(a)	The value in B18 would be Mortgage/rent The value in A18 would be the maximum value in A3:A15 which is 1000 The lookup function would search the range A3:B15 to find 1000 It returns the value <u>in the same row</u> but in column 2.	4

Question	Answer	Marks
6(b)	**Eight** *from:* A table with columns for Test, Test data, Actual result, Expected result and comments on comparison of actual result – 2 marks (1 for at least 3 appropriate headings and 2 for 5 appropriate headings) Test the SUM function by changing some values in A3:A15 Test the MAX function by changing some values in A3:A15 Calculate the expected results for SUM using a calculator, MAX using sight Test the VLOOKUP function by changing values in B3:B15 and some values in A3:A15 Look through the data to find what should be in the LOOKUP cell To test the A1-A17 formula change the value in A1 and some of the values in A3:A17 Calculate the expected results for =A1-A17 using a calculator Run each test Make a note saying whether there are any differences between actual results and expected results.	8

Question	Answer	Marks
7(a)	**Six** *from:* Open the database Create a query In query design view in the field row of the grid Type in year_group: 2012 – [year_of_birth] Save the query Run the query.	6
7(b)	**Eight** *from:* Create a query based on the previous query (part (a)) Select the fields student_ID, student_name, option_1 and year_group Deselect option_1 and year_group fields for showing In the criteria box under year_group, type 10 In the criteria box under option_1, type "History" Run the query and save it Create the report from this query The number of students will appear in the footer In the report section, format the report.	8

Question	Answer	Marks
8	***Eight** from:* *Benefits:* If CCTV cameras constantly monitor a retail business, criminals will likely seek an easier target/may not commit the crime If employees know that they are constantly being watched, they are less likely to steal from their employer or waste time on the job If a crime occurs in an establishment that has installed CCTV surveillance, investigation will be aided by the recorded video/can be used as evidence in court cases If an argument occurs between two employees, the employer can examine the videotape to determine what actually occurred CCTV can help settle disputes when a customer has a complaint cameras are effective in apportioning blame *Drawbacks*: CCTV is usually not able to display every bit of an area Some people object to the invasion of privacy due to constant video monitoring Employees under constant surveillance by CCTV cameras often dislike monitoring of their daily behaviour The cameras can sometimes be thwarted by covering them up Someone who is familiar with the property may still be able to avoid being caught on camera Hackers can get into the system and control which ways the cameras are pointing while their comrades in crime do the crime. *Must have no more than 6 from each section.* *One mark is available for a reasoned conclusion.*	8

Question	Answer	Marks
9	***Four** from:* Word processing files are a word processing file type Spreadsheets are a different file type and do not recognise word processing file types To overcome this Wilhelm should convert his word processing file to a generic file format He could save his word processed file as a .csv file or a .txt file <u>He will then</u> be able to open his spreadsheet software and open the file.	4

Question	Answer	Marks
10	***Four*** *from:* Absolute and relative cell referencing makes sure you only increment the parts of a formula you need to Cell protection makes sure that the cells you want do not change by accident User interface forms makes it easier to input values into the model Macros make it easier to create more complex formulae or functions Automatic re-calculation means it is not necessary to evaluate a formula every time you change it Conditional formatting allows you to highlight certain values that match specific criteria Graphs/charts to detect trends.	**4**

Question	Answer	Marks
11	***Six*** *from:* MIS is a computer-based system that provides managers with the tools to organise, evaluate and efficiently manage departments within an organisation It provides past, present and prediction information It includes software that helps in decision making It includes many data resources such as databases It includes the hardware resources of a system It includes decision support systems, people management and project management applications Companies are able to identify their strengths and weaknesses due to the presence of revenue reports, employees'.	**6**

Question	Answer	Marks
12	***Six*** *from:* Agree a date and time Send a reminder/invitation to the participants shortly before start…. …. including access to password/PIN Adjust webcam so they can be seen Create and enter virtual room(s)/environment Load/examine/share documents using appropriate software Uploads any necessary documents for the meeting Sends a link to the website Enter his user name and password Using the software select participants Select appropriate meeting space/room Select those participants who can enter the room Limit the participation of participants/mute volume/disable messaging/disable cameras Communicate by speaking into a microphone and looking at the webcam.	**6**

Question	Answer	Marks
13	***Six*** *from:* Forward chaining starts with the available data and uses inference rules to extract more data... ... until a goal is reached An inference engine using forward chaining searches the inference rules until it finds one where the IF statement is known to be true When such a rule is found, the inference engine uses the 'THEN' part to cause the addition of new information Inference engines will iterate through this process until a goal is reached Backward chaining starts with a list of goals/hypotheses and works backwards An inference engine using backward chaining would search the inference rules until it finds one which has a THEN part that matches a desired goal If the IF part of that rule is not known to be true, then it is added to the list of goals Because the list of goals determines which rules are selected and used, this method is called goal-driven… …in contrast to data-driven forward-chaining.	**6**