



Cambridge National

IT

Unit **R012/01**: Understanding tools, techniques, methods and processes for technological solutions

Level 1/2 Cambridge National Certificate/Award/Diploma in IT

Mark Scheme for June 2018

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This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by examiners. It does not indicate the details of the discussions which took place at an examiners' meeting before marking commenced.

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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These are the annotations, (including abbreviations), including those used in scoris, which are used when marking

Annotation Name	Description	What it means to you the AE on this paper
Highlight	Highlight (mandatory for all units)	Can use this to show areas on diagram or long response which you think is important.
Off Page Comment	Off page comment (mandatory for all units)	Not needed
BP	Blank page (mandatory for all units)	ON extra pages with no writing – needed on AOs
Tick P	Correct mark	
Cross X	In correct mark	
TV	Too vague	Not enough in your opinion to award the mark
SEEN	Noted but no credit given	Use on questions where there is NO RESPONSE
NE	No example	Not needed
BOD	Benefit of doubt	In your professional opinion you can see what they are saying and award the mark.
NBOD	Benefit of doubt not given	In your professional opinion you don't think they meant the answer
NAQ	Not answered question	
L3	Level 3	Only to be used on Questions 10 & 18.
L2	Level 2	
L1	Level 1	
REP	Repeat	The candidate has already said this, so they don't get it a second credit.
FA	First answer seen and marked. Incorrect answer given	Not needed

Question	Answer/Indicative content	Mark	Guidance
1	<p>One mark for valid answer.</p> <ul style="list-style-type: none"> • initiation (1). • planning (1). 	1	
2	<p>One mark for valid answer.</p> <p>e.g.</p> <ul style="list-style-type: none"> • activities (1). • tasks (1). 	1	Mark first answer given.
3	<p>One mark for valid answer.</p> <ul style="list-style-type: none"> • (desktop) publishing/DTP (1). • presentation software (1). • art packages (1). • word processing (1). 	1	<p>Accept any reasonable software with drawing tools to create an image to show what it is going to look like.</p> <p>Accept trade names.</p>
4	<p>For two marks.</p> <p>e.g.</p> <ul style="list-style-type: none"> • better quality feedback/more detailed feedback (1). • <u>more</u> accurate/more timeous (1). • opinions given by people who have used the product/feedback is more informed (1). • longer interviews are possible (1). • cross section of consumers invited/different ages of consumers (1). • better engagement as have volunteered (1). • allows facial reactions to be seen (1). 	2	<p>Numbers on the answer area are for reference only. Candidate may have written both answers in the first space.</p> <p>Mark first two answers.</p> <p>This question asks candidates to identify, and not to describe or explain. Therefore, mark the answer given, even if explanation or discussion is not totally correct.</p> <p>Accept answers relating to the use of a consumer panel to collect feedback on the new healthy snack range.</p> <p>DO NOT accept “easy to collect feedback” or similar DO NOT accept “process is quicker” or similar. However, ‘feedback can be provided directly’ is acceptable DO NOT accept ‘data is accurate.</p>

Question	Answer/Indicative content	Mark	Guidance
5	<p>Two marks for full definition.</p> <p>e.g.</p> <ul style="list-style-type: none"> • to steal data/personal information (1) through use of a fake website (1). • to redirect people from a legitimate website (1) to a fake website (1) to steal data (1). • to redirect web users (1) to a fake website/without their knowledge (1). 	2	Answer must show an awareness of the intention to steal data or that the second website is false.
6	<p>One mark for valid answer.</p> <ul style="list-style-type: none"> • evaluation (1). 	1	CAO.
7	<p>Two marks for valid description.</p> <p>e.g.</p> <ul style="list-style-type: none"> • you can hear their voice (1) to understand what the product is (1). • you can show the product (1) with a camera (1). • there is an opportunity for two-way dialogue (1) to increase understanding (1). • can be used using a wide range of mobile devices(1), meaning it is a flexible method (1). • less hardware in the building (1) as use same cabling (etc.) for cable and voice (1). • allows for group calls (1) that allow sharing information with more than one store manager at a time/making communication more efficient (1). • there is no marginal/extra cost (1) if paying for data at a flat fee (1). 	2	DO NOT accept “Easier” or “Faster” or “Easier to set up”. DO NOT accept “Cheaper”.

Question		Answer/Indicative content	Mark	Guidance
		QUESTIONS FOCUS ON CASHLESS CATERING SCENARIO (Q8 – Q11)		
8	(a)	<p><i>One suitable input.</i></p> <p>e.g.</p> <ul style="list-style-type: none"> • (user/school/client) requirements (1). • (user/school) constraints/boundaries (1). • business case (1). • resources (1) (accept examples). 	1	<p>Accept “collection of ideas for what user wants”.</p> <p>Accept use of specific terms/examples.</p>
	(b)	<p><i>One suitable output.</i></p> <p>e.g.</p> <ul style="list-style-type: none"> • project plan (1). • test plan (1). • constraints list (1). • phase review (1). 	1	
9		<p><i>Two marks for a valid description.</i></p> <p>e.g.</p> <ul style="list-style-type: none"> • as personal data is being used (1) the data must be protected (1). • personal data must be protected (1) which is a requirement (1). • the school must make sure personal data is up to date (1), to meet the legal requirements (1). • must comply with the legal requirements (1) as involves personal data (1). 	2	<p>First and second parts of these answers can be mixed and matched.</p> <p>Mark first answer.</p> <p>Other aspects of the DPA are applicable.</p> <p>Answer must be based on the scenario. Where answer is <u>clearly</u> not based on scenario, no marks available.</p> <p>Data Protection Act on its own would be sufficient for one mark.</p>

Question	Answer/Indicative content	Mark Guidance
10	<p>Indicative Content:</p> <ul style="list-style-type: none"> • Financial resources can be allocated in advance, so that the school can plan spending and keep within its budget. • Phase reviews take place, meaning that the school will be able to see the progress being made and to see that the project is on schedule, this will increase the confidence that the school has that the cashless payment system will be delivered on time. • The feasibility report produced by the project team will allow the school to abandon/postpone the project after the initiation phase, if it will not be possible to deliver the cashless payment system within the time/financial constraints. • The project team will have created agreed project and test plans, so the school will know what the delivered cashless payment system will be like. • A recognised series of steps to help organise the project. 	<p>Mark Band 3: (6-8 marks) Candidate explains the advantages to the school of following the project life cycle when developing the cashless payment system. Answer will be given in context.</p> <p>At the bottom of the mark band more than one advantage has been explained, each in reasonable depth.</p> <p>Mark Band 2: (3-5 marks) Candidate describes the advantages to the school of following the project life cycle when developing the cashless payment system. Answer may not be given in context.</p> <p>At the top of the mark band more than one advantage has been described.</p> <p>At the bottom of the mark band weak description of one advantage.</p> <p>Mark Band 1: (1-2 marks) Candidate identifies generic points in relation to the project life cycle.</p> <p>At the top of the mark band more than one advantage identified.</p> <p>At the bottom of the mark band any point made.</p> <p>0 marks No answer given or answer not worthy of credit.</p>

Question	Answer/Indicative content	Mark	Guidance
11 (a)	<p>Two marks for two suitable constraints.</p> <p>e.g.</p> <ul style="list-style-type: none"> • time (1). • resources (1). • security (1). • risk management (1). • budget/money/finances (1). • staff expertise (1). • legislation (1). 	2	Mark first answer given.
	<p>Two marks for valid description:</p> <p>Examples of possible exemplification provided below:</p> <p>time:</p> <p>e.g.</p> <ul style="list-style-type: none"> • tasks schedule can be carefully planned/create gantt (or equivalent) chart/follow project lifecycle (1), so lower risk of delays/deliver on time (1). • time contingency can be built in to the project (1) so delivery of system to school will not be delayed (1). <p>Two marks for valid description:</p> <p>resources:</p> <p>e.g.</p> <ul style="list-style-type: none"> • a cost contingency can be built in to the project (1) to prevent overspend (1). 	2	<p>Any constraint given must be reviewed on its own merits in relation to the description. If valid award marks.</p> <p>DO NOT award answers that suggest that checking that the constraint exists is a method of mitigation (e.g. check that you have enough resources before the project starts).</p>

Question	Answer/Indicative content	Mark	Guidance
	<ul style="list-style-type: none"> • costs used in planning phase must be accurate (1) to stay within the budget (1). <p>Two marks for valid description:</p> <p>security:</p> <p>e.g.</p> <ul style="list-style-type: none"> • purchase of anti-virus software is included in the project plan (1) to reduce risk of security breach (1). • project team consider cyber-security measures (1) in the feasibility study (1). <p>Two marks for valid description:</p> <p>risk management:</p> <p>e.g.</p> <ul style="list-style-type: none"> • the impact of each risk is considered (1) to prioritise the important ones (1). • project team consider the probability of each risk (1) to reduce the chance of problems (1). <p>Two marks for valid description:</p> <p>budget:</p> <p>e.g.</p> <ul style="list-style-type: none"> • check all spending is required (1) so that no money is wasted (1). • reduce waste (1) so that best use is made of all resources (1). 		

Question	Answer/Indicative content	Mark	Guidance
	QUESTIONS FOCUS ON PROGRESS HARRIERS SCENARIO (Q12 – Q15)		
12 (a)	<p><i>One mark for valid answer.</i></p> <ul style="list-style-type: none"> • shoulder surfing (1). • baiting (1). 	1	
(b)	<p><i>Up to three marks for valid explanation.</i></p> <p><i>Identification of method (1).</i> <i>Explanation of how the method solves the problem (2).</i></p> <p>e.g.</p> <ul style="list-style-type: none"> • train all race officials on the types of social engineering (1), so that they are better able to identify social engineering threats (1) and know how to take counter measures (1). • make members of Progress Harriers aware of the possible consequences to the club of a social engineering threat (1), they will be more motivated to be vigilant (1) reducing the chance of them divulging confidential information (1). • encourage members to report any email that might pose a threat (1), enabling the club to take action (1) by informing all other members (1). • physical screens/nobody else in the room (1) physically keeps others away from the data (1) so they cannot see it to steal it (1). 	3	<p>Accept answers relating to any form of social engineering.</p> <p>DO NOT award “hire a white hat hacker” or equivalent.</p> <p>Answer must be about stopping social engineering not managing the impacts of social engineering.</p>

Question		Answer/Indicative content	Mark	Guidance
13	(a)	<p>Physical prevention measures – MAX one.</p> <p>e.g.</p> <ul style="list-style-type: none"> • biometric access device (1). • cable (1). • lock the doors (1). • turn off computer when not in use (1). <p>Logical prevention measures – MAX two.</p> <p>e.g.</p> <ul style="list-style-type: none"> • username and password (1)/password (1). • access rights (1). • encryption (1). • secure backups (1). • firewall (1). • anti-virus (1). 	3	Answers may deal with the issues raised in the scenario OR be general issues.
13	(b)	<p>Up to two marks for a valid description.</p> <p>Examples of possible exemplification provided below:</p> <p>access rights</p> <p>e.g.</p> <ul style="list-style-type: none"> • unauthorised access will be prevented (1) as a username and password will be needed to access the data (1). • the data can only be accessed by authorised people (1) who have the correct credentials (1). 	2	<p>Any logical prevention measure given must be reviewed on its own merits in relation to the description. If valid award marks.</p> <p>Encryption DO NOT accept “data will be unreadable” – data is scrambled, not made unreadable</p>

Question	Answer/Indicative content	Mark	Guidance
	<p>encryption</p> <p>e.g.</p> <ul style="list-style-type: none"> • people will only be able to read the data (1) if they have the encryption key (1). • the data will be scrambled (1) and will not be able to be understand if stolen (1). <p>secure backups</p> <p>e.g.</p> <ul style="list-style-type: none"> • data can be restored from a secure backup (1) if the original data has been lost (1). • secure backups of data stored away from the original data (1) will reduce the risk of damage to both at the same time (1). 		
14 (a)	<p><i>Two marks for a valid description.</i></p> <p>e.g.</p> <ul style="list-style-type: none"> • validation (1st) checks data is of correct type/suitable (1) to reduce data entry errors (1). • forms (1st) data entered one record at a time/use of prompts guides the user/enter data into different tables (1st). • tables (1) organise data into groups (1). • columns (1st) so that the same type of data is added to the same (relative) place (1). • rows (1st) enter the data for one data subject into one organised row (1). 	2	<p>First mark is for identifying the feature.</p> <p>If no feature identified, no marks may be awarded.</p>

Question	Answer/Indicative content	Mark	Guidance
(b)	<p>Two marks for a valid description.</p> <p>e.g.</p> <ul style="list-style-type: none"> • query (1st) to search data using given criteria/ find <u>specific</u> (or equivalent) information (1) can be saved and used again (1). • report (1st) can be used to present information in an easy to read form/that can be printed out (1). • print (1st) to generate a hard copy (1). 	2	<p>First mark is for identifying the feature.</p> <p>If no feature identified, no marks may be awarded.</p> <p>DO NOT accept “to find information” as an extension for query. This must be a query to find specific or a type of information.</p> <p>Equivalent to specific can be quite loose – accept “extract data according to the user’s request”, for example.</p>
(c)	<p>Three marks for each valid explanation - MAX three per explanation.</p> <p>Reason (1). Explanation of reason (2).</p> <p>e.g.</p> <ul style="list-style-type: none"> • Relational database (1) reduces data redundancy (1) smaller file size/less chance of data entry error (1). • Databases use multiple tables (1) linked by relationships (1) to create complex queries (1). • Database input forms (1) and a switchboard (1) can be used to simplify the user interface (1). • Progress Harriers only record data (1) so they will not need to perform calculations (1), produce charts/ use complex functions (1). 	6	<p>Accept converse answers about spreadsheets (spreadsheets DO NOT have)</p> <p>DO NOT accept answers that suggest that only databases can use queries or that the reason is simply due to queries.</p> <p>DO NOT accept answers to do with ease or speed of set up.</p>

Question		Answer/Indicative content	Mark	Guidance
15	(a)	<p>For one mark.</p> <ul style="list-style-type: none"> integrated document (1). 	1	CAO.
	(b)	<p>Two marks for each valid explanation - MAX two per explanation.</p> <p>Identification of advantage (1). How this is an advantage/what caused it (1).</p> <p>e.g.</p> <ul style="list-style-type: none"> reduced data entry errors/data for competitors is reliable (1) as using the information directly from the database (1). it will take less time (1) as this process can be automated (1) / the document can be reused (1). (source) data can easily be changed (1) if there is an error (1). once set up it can be used by less skilled workers (1) without the need for training (1) / they can produce a document beyond their skills level (1). template can be populated with data from the database (1) which is more efficient (1). the use of templates gives a consistent layout (1) because the fields are pre-positioned (1). 	4	<p>This answer is NOT dependant on Q15a.</p> <p>Accept answers relating to both mail merge or use of template.</p>

Question		Answer/Indicative content	Mark	Guidance
		QUESTIONS FOCUS ON CHARITY SCENARIO (Q16 – Q21)		
16	(a) (i)	<p>One mark for a suitable device.</p> <p>e.g.</p> <ul style="list-style-type: none"> • tablet (1). • notebook (1). • smartphone (1). • touchscreen (1). • laptop (1). • keyboard (1). 	1	<p>Input devices, IN CONTEXT as well as general devices are acceptable.</p> <p>Discussion – where do people fill in the online questionnaire?</p> <p>The device must be suitable for use in the street.</p> <p>Do not accept “phone” (mark as TV).</p> <p>Do not accept “mobile device/phone”.</p> <p>Do not accept “mouse”.</p>
	(a) (ii)	<p>One mark for a suitable connectivity requirement.</p> <ul style="list-style-type: none"> • mobile data (1). • WI-FI (1). • 3G data (1). • 4G data (1). • (mobile) broadband (1). • NIC (1). 	1	
	(b)	<p>Three marks for valid explanation.</p> <p>Implication (1).</p> <p>Explanation (2).</p> <p>e.g.</p> <ul style="list-style-type: none"> • the charity could collect inaccurate data (1) as the questions could be ambiguous (1), leading to poor choices being made (1). • the charity could lose income (1) because data 	3	<p>Answers may be more generic here and not necessarily based on the charity.</p>

Question		Answer/Indicative content	Mark	Guidance
		<p>collected will be invalid (1) leading to poor marketing decisions (1) and the charity targeting the wrong potential donors (1).</p> <ul style="list-style-type: none"> the reputation may be damaged (1) which will results in financial loss (1) as donors will stop making donations (1). 		
17	(a)	<p>Two from.</p> <ul style="list-style-type: none"> text (1). alphanumeric (1). numeric (1). currency (1). date/time (1). limited choice (1). object (1). logical/Boolean/true-false/yes-no (1). 	2	DO NOT accept "number".
	(b)	<p>Up to TWO marks for a full justification</p> <p>Examples of possible exemplification provided below:</p> <p>Two marks for justification in relation to text:</p> <p>e.g.</p> <ul style="list-style-type: none"> the data stored will include first names (1) which only contain text (1). the address details will include the town (1) comprised of letters only (1). 	2	<p>Any chosen data type given must be reviewed on its own merits in relation to the justification. If valid award marks.</p> <p>Acceptable answers will typically be of the form of stating that the data stored includes the specific data type, followed by why that data type is therefore appropriate.</p>

Question	Answer/Indicative content	Mark	Guidance
	<p>Two marks for justification in relation to alphanumeric:</p> <p>e.g.</p> <ul style="list-style-type: none"> • telephone numbers will be stored (1), these have a leading zero which alphanumeric will allow (1). • post codes will be stored (1), these contain numbers and letters (1). <p>Two marks for justification in relation to logical/Boolean:</p> <p>e.g.</p> <ul style="list-style-type: none"> • the database includes Yes/No data for 'monthly basis' (1), this is best stored as a Boolean (1). • a logical data type is best for True/False data (1), such as 'wants direct marketing' (1). <p>Two marks for justification in relation to limited choice:</p> <p>e.g.</p> <ul style="list-style-type: none"> • the database will include the title of each donor (1), so a drop down list for Mrs, Ms, Mr etc. will be easy to use (1). • the address of each donor will include the county (1), input errors will be reduced if a drop down list of counties is used (1). <p>Two marks for justification in relation to date:</p> <p>e.g.</p> <ul style="list-style-type: none"> • the date of birth of each donor will be stored (1) so will need to be stored as a date format to allow queries (1). 		

Question	Answer/Indicative content	Mark	Guidance
	<ul style="list-style-type: none">the date of donations will be stored (1), this data will only contain date information (1). <p>Two marks for justification in relation to numeric:</p> <p>e.g.</p> <ul style="list-style-type: none">the value of each donation will be stored (1), this will be a number of pounds (1).the age of each will be stored (1), this will be a number of years and months (1).		

Question	Answer/Indicative content	Mark Guidance
18	<p>Indicative Content:</p> <ul style="list-style-type: none"> • The charity could use names and addresses of donors to send out integrated documents appealing for donations, but it must check that these details are up to date to reduce errors and to maximise donations. • The charity could use a spreadsheet to look for trends in the data to identify which donors are likely to give money again, helping to target marketing more accurately and increase donations. • Postcodes could be used to look for patterns in the home location of donors and to identify hot spots and cold spots. Action can then be taken to increase donations in cold spots. • Database queries could be used to identify donors who pay on a monthly basis; these donors could be contacted by email, asking them to increase their monthly donation. Similarly, donors that do not make a donation every month could be asked to do so. • Answer MUST be about how data be put to use, not stored or managed. 	<p>Mark Band 3: (7-10 marks) Candidate explains the different ways in which the charity could use this data. Answer will be given in context.</p> <p>At the bottom of the mark band more than one way has been explained, each in fair depth.</p> <p>Mark Band 2: (4-6 marks) Candidate describes the different ways in which the charity could use this data. Answer may not be given in context.</p> <p>At the top of the mark band more than one way has been described.</p> <p>At the bottom of the mark band weak description of one way.</p> <p>Mark Band 1: (1-3 marks) Candidate identifies generic points in relation to the way data could be used.</p> <p>At the top of the mark band more than one way identified.</p> <p>At the bottom of the mark band any point made.</p> <p>0 marks No answer given or answer not worthy of credit.</p>

Question	Answer/Indicative content	Mark	Guidance
19	<p>Two marks for suitable environmental vulnerabilities.</p> <p>e.g.</p> <ul style="list-style-type: none"> • flooding (1). • fire (1). • lightning strike (1). • storm (1). • natural disaster (1). 	2	
20	<p>Three marks for valid explanation.</p> <p>Identification of financial implication (MAX 2). Explanation of why this implication occurred (MAX 2).</p> <p>e.g.</p> <ul style="list-style-type: none"> • Money could be lost/stolen (1) as the target of the attack was the charities funds/information to get to the funds (1) so access data/passwords have been targeted (1). • The charity might have to spend money to investigate the cyber-security attack (1), recover from the attack (1) and improve data security (1). • The charity might lose income, (1) due to loss of donations (1) from donors who do not trust the charity (1) because their personal data has been stolen (1). 	3	DO NOT accept indirect implications, such as ransom requests or DPA implications, etc.
21	<p>Three marks for each valid explanation - MAX three per explanation.</p> <p>Reason (1). Explanation of reason (2).</p>	6	<p>DO NOT accept answers that imply the Green Energy supplier is anything other than a green energy supplier.</p> <p>DO NOT accept answers that are based on misuse of data or other implication after it has been given away. Question is about the response to the initial request.</p>

Question	Answer/Indicative content	Mark	Guidance
	<p>e.g.</p> <ul style="list-style-type: none"> • The data on the use of solar panels could contain personal data (1) and must not be shared without the permission of the donors (1), as this would be illegal under the legislation (1). • This data might allow individual donors to be identified (1) so it is personal data (1) and covered by the relevant legislation (1) so the charity will need donors permission to share it (1). • The data was given to the charity not the other company (1). So, if the information is given out they could be sued (1) as it is against legal requirements (1). 		<p>Acceptable answers may not be presented in the same order as here, or may be partial. For example “DPA states that data should only be used for the stated purpose (1) may be awarded a mark.</p>

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