OCR
Oxford Cambridge and RSA

# Cambridge National

# Information Technologies

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 January 2019

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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 | | | • Initiation (1). | 1 | **Low level answer**<br><br>'Initiation phase' / 'Initiate' / "initialization" would be accepted.<br><br>If term is used that is different but matches the same equivalent point in any project life cycle award mark. |
| 2 | | | • Time (1).<br>• Timescale (1). | 1 | 'Date' - not acceptable |
| 3 | | | • Information (1). | 1 | CAO (although 'info' would be accepted). |
| 4 | | | Possible responses may include:<br><br>• To monitor heart rate of patients (1) it will transmit live data back to the heart unit (1).<br>• To measure blood pressure of patients (1) it would highlight any patterns and trends in blood pressure over a 24 hour period.<br>• Fitbit (1) to measure heart rate/count how many steps taken (1) to assess fitness (1)<br>• Any other valid suggestion. | 2 | One mark for identifying the wearable technology.<br>One mark for identifying the use of a wearable technology.<br>One mark for describing how it would be used in the healthcare sector.<br><br>**Read whole answer mark to best advantage of candidate.**<br>**<u>This question is NOT marked as a list</u>.**<br><br>Watch = TV (<u>Smart</u> Watch is ok)<br>Keep track of health = TV<br>DNA "pace maker" as wearable tech.<br>"Keep track of health and fitness" (1) |
| 5 | | | • Black hat hacking (1). | 1 | CAO (although black hat and black would be accepted). |
| 6 | | | Possible responses may include:<br><br>• Data manipulation (1).<br>• Data modification (1).<br>• Data changes (1). | 1 | |

| Question | | | Answer/Indicative content | Mark | Guidance |
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| 7 | | | Possible responses may include:<br><br>• This is a copy of the data/files (1) that is stored away from the original data/files (1).<br>• These are copies of files/programmes/systems that are kept in a locked room (1) in case the original data is lost (1).<br>• Any other valid suggestion. | 2 | **Up to two marks for definition.**<br><br>No mark awarded for mention of encryption<br><br>Basic structure of answer - to make a copy (1) in another location (1)<br><br>DO NOT accept “make a second version” as equivalent to copy. |
| 8 | | | Possible responses may include:<br><br>• Over writing (1).<br>• Physical destruction (1).<br>• Hard Drive Shredder (1). | 1 | |
| 9 | (a) | | Possible responses may include:<br><br>• It details the task information (1), the order in which tasks should be completed (1) and any dependencies (1).<br>• It shows the timescales (1) that the project can be completed in (1) to inform planning (1).<br>• Longest path (1) which also represents the shortest amount of time (1) in which a project can be completed (1)<br>• Any other valid suggestion. | 3 | **Up to three marks for a valid description.**<br><br>**(Look at the context for this question on the QP)**<br><br>**‘Describe', not ‘Describe one’ so must mark whole answer** |

| Question | | | Answer/Indicative content | Mark | Guidance |
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| 9 | (b) | | Possible components may include:<br><br>• Task labels (1).<br>• Title (1).<br>• Task (1).<br>• Task name (1).<br>• Task description (1).<br>• Task number (1).<br>• Task type (1).<br>• Concurrent Task (1).<br>• Dependent Task (1).<br>• Time / Timescales/ Duration (1).<br>• Nodes(1).<br>• Milestones (1).<br>• Events (1).<br>• Vectors (1).<br>• Dependencies (1).<br>• One relevant visual feature e.g. arrow (1). | 3 | **Award first visual feature and ignore subsequent visual features and do not regard as attempted answers**<br><br>**e.g answer…**<br><br>• **Arrow, Circle dotted, line**<br>• **Time**<br>• **Nodes**<br><br>**would get <u>3 marks</u> as second and third visual features in first bullet are ignored.**<br><br>**"link" is BOD for a line/visual feature** |
| 9 | (c) | | Possible disadvantages may include:<br><br>• A PERT chart may contain unreliable data (1) which might result in unreasonable expectations around cost/time (1).<br>• PERT chart includes timescales but not dates (1) and so may be difficult to use in real time / impose on a calendar (1)<br>• Can become complex (1) especially for more complicated projects (1)<br>• Any other valid suggestion. | 2 | **Up to two marks for a valid explanation.**<br><br>Question is about USE not CREATION of PERT chart<br><br>Other answers could be linked to the labour intensiveness of the chart, the continuous review of the planning tool and the fact they are not suitable for large, complex projects. |

| Question | | | Answer/Indicative content | Mark | Guidance |
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| 10 | (a) | | Possible disadvantages to the store may include:<br><br>• Staff would be required to scan the QR codes for the customers (1). This will prevent staff from putting out stock or tidying the store if they are constantly interrupted (1).<br>• The store could lose custom (1) because customers without smartphones may not want to wait for a sales person to scan the QR code (1).<br>• Increased cost of manufacture / expensive to create labels (1) as extra detail has to be added to the labels (1)<br>• If the system fails e.g. label is destroyed (1) sales can't be completed (1)<br>• Set up costs (1) to purchase QR readers (1)<br>• Budget implications (1) to put QR code on labels (1)<br>• Any other valid suggestion. | 2 | **Up to two marks for a valid explanation.**<br><br>This must relate to disadvantages **to the store** for marks to be awarded**.**<br><br>**<u>If answers states that "customer can not scan the date", this is incorrect. Customers not being able to read it is a disadvantage to the customer and should not be awarded.</u>**<br><br>**<u>However, scenario states that QR workstations will be set up. Therefore, an answer that states that a powercut could make the codes impossible to read (without mentioning the customer), this must be awarded.</u>** |
| 10 | (b) | | Possible disadvantages to customers may include:<br><br>• Scanning the codes or seeking help for the codes to be scanned (1) can be time consuming (especially if customers are short of time) (1).<br>• Customers with limited technical knowledge may struggle to understand that information can be provided via QR codes (1). They will be expecting to see textual information on labels and therefore get frustrated (1).<br>• Customers must enter personal details (1) leaving them vulnerable to hacking (1).<br>• Any other valid suggestion. | 2 | **Up to two marks for a valid explanation (identify the problem and explain why it is a problem).**<br><br>This must relate to disadvantages **to the customers** for credit to be awarded.<br><br>Other answers could be linked to needing a QR code scanning app which needs to be downloaded.<br><br>e.g. Would need a QR scanning app (1) without which they can not access the information (1) |

| Question | | | Answer/Indicative content | Mark | Guidance |
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| 11 | (a) | | Up to three possible marks:<br>• Copyright, Designs and Patents Act (1st) permission must be obtained for the software to be used (1) this could be purchasing license software l (1) which matches the number of QR workstations it is to be installed on (1).<br>• GDPR / DPA (1st) as the software needs to be fully secure for data (1) as it holds personal data (1) | 3 | **1st mark for valid piece of legislation. Up to a further two marks for a valid description. (For GDPR/DPA, accept any aspects)**<br><br>No mark awarded if no identification of legislation<br><br>Read whole answer to best advantage of candidate |
| 11 | (b) | | Possible responses may include:<br><br>Computer Misuse Act (1st) all data must be kept secure (1) and if data is accessed unlawfully then the attacker can be prosecuted (1).<br><br>GDPR / DPA (1st) as personal may be stored by the programme (1) and so needs to be protected (1) | 3 | **1st mark for valid piece of legislation. Up to a further two marks for a valid description. (For GDPR/DPA, accept any aspects)**<br><br>No mark awarded if no identification of legislation<br><br>Read whole answer to best advantage of candidate |
| 12 | | | Possible ways may include:<br><br>• The General Data Protection Regulation (GDPR) will mean that WS are unable to access this information by default (1) without the customer's consent (1).<br>• The GDPR means that WS must tell customers how to withdraw consent to sharing data (1) so customer controls their data (1).<br>• WS can only store information if agreed by the customer (1) because of the GDPR (1).<br>• Prevents people from hacking/stealing data (1) by making the process illegal (1)<br>• Any other valid suggestion. | 4 | **Up to two marks for each of two valid explanations.**<br><br>Accept Data Protection Act (DPA) for General Data Protection Regulation (GDPR).<br><br>DO NOT accept GDPR implications that are not to do with moral or ethical issues. For example, data retention is not relevant.<br><br>DO NOT accept Freedom of Information Act as only applies to public authority |

| Question | | | Answer/Indicative content | Mark | Guidance |
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| 13 | | | Possible outputs may include:<br><br>• QR Codes on clothing (1).<br>• QR workstations (1).<br>• WS mobile app (1).<br>• Training of staff (1).<br>• User guide / documentation (1).<br>• Test results (1) (NB **NOT a test plan**).<br>• Deliverable product (1).<br>• Phase review (1).<br>• Any other valid suggestion. | 2 | **For two marks.**<br><br>The answer can either be generic or in context. |

| Question | | | Answer/Indicative content | Mark | Guidance |
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| 14 | | | **Indicative Content:**<br><br>**Advantages to PP:**<br><br>• Being able to provide customers with updates to delivery times will be an advantage to Progress Pizzas as customers will be made aware of any changes to the delivery time and this should improve customer satisfaction overall.<br>• The PP mobile app will make it easier for Progress Pizzas to update the menu, compared to the paper based version, so new items and special offers can be quickly shared with customers through the app, increasing sales.<br>• The PP app allows Progress Pizzas to share the menu with customers at any time of day and they do not need to visit a branch to place an order. This means that PP can accept orders even when the branch is closed.<br>• Any other valid suggestion. | **8** | Band 3: [**6-8 marks]**<br>Learner **explains** the advantages to Progress Pizzas of using the mobile app to share information with customers. At least two advantages are considered with clear and well-structured exemplification directly relevant to the context.<br>Specialist terms will be used correctly and appropriately.<br><br>**Band 2: [3-5 marks]**<br>Learner **describes** the advantages to Progress Pizzas of using the mobile app to share information with customers.<br>Advantages may be provided but opportunities within the exemplification of these advantages linked to the given context will be missed.<br>Specialist terms will be used appropriately and for the most part correctly.<br><br>**Band 1: [1-2 marks]**<br>Learner has **identified** points relevant to Progress Pizzas' use of the mobile app to share information with customers.<br>This may take the form of a bulleted list.<br>There will be little, if any, use of specialist terms.<br><br>**0 marks**<br>Nothing worthy of credit. |

| Question | | | Answer/Indicative content | Mark | Guidance |
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| 15 | | | Possible responses may include:<br><br>• Sensors could measure the driver's speed / acceleration (1) on each delivery journey, as a measure of driving quality/to compare to legal speed limit (1).<br>• Sensors could track drivers routes / timings to analyse delivery times (1). This could aid planning of driver route allocations (1).<br>• Any other valid suggestion. | 2 | **Up to two marks for a valid description.**<br><br>**This question is about data collection analysis and not about the collection of data itself.** |
| 16 | (a) | | Possible responses may include:<br><br>• Laptop/Netbook/Chromebook (1).<br>• Tablet (1)<br>• Desktop computer (1).<br>• Projector (1)<br>• Printer (1)<br>• Television (1)<br>• Monitor (1) | 1 | **DNA Camera or other input device** |
| 16 | (b) | | Possible responses may include:<br><br>• Spreadsheet (1).<br>• Database (1).<br>• Word Processing software (1)<br>• Presentation software (ie where a chart may be created) | 1 | **DNA**<br><br>**DTP (or variation)**<br>**Graphics manipulation software**<br><br>**If no marks awarded her no marks for justification**<br><br>**Accept trade names** |

| Question | | | Answer/Indicative content | Mark | Guidance |
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| | | | **Spreadsheet Justification**:<br><br>• Spreadsheets allow data to be sorted (1) and filtered (1) to create useful information (1). A spreadsheet could be created in each branch using a template (1) and sent as an email attachment (1), then in Head Office these could be imported (1) into a single workbook (1) which will save the Data Manager time (1).<br>• By using a spreadsheet it will be easy to create charts/graphs (1) and to carry out calculations (1) to compare (1) data from previous months (1).<br>• Functions such as Min and Max (1) can be used to compare branches (1) against calculated averages (1).<br>• Columns and rows (1) can be used to store information (1) one per store (1) so that totals can be calculated (1)<br>• Any other valid suggestion.<br>**Database Justification**:<br>• Database applications allow data to be organised in tables (1) which can be sorted (1) to make it easier to understand (1).<br>• Validation rules (1) and input masks (1) reduce data entry errors (1) so the Data Manager will create better quality data (1).<br>• Queries can be run (1) which will allow information to be created from the raw data (1) allowing the Data Manager to look for trends (1).<br>• Database applications allow staff to create summary reports (1) that make the data easier to understand (1) which would improve the quality of presentation (1).<br>• Outcome of analysis can be put straight into presentation(1) / if compatible (1)<br>• Any other valid suggestion. | **4** | **Up to four marks for a valid justification.**<br><br>**<u>Justification must relate to the software resource chosen in part b(i).</u>**<br><br>**<u>Justification may be a series of points saying what can be done with the software (must be valid) or why it should be used.</u>**<br><br>Marks can be taken using a mix and match approach across the different bullet points.<br><br>Read whole response and mark to candidate's best advantage.<br><br>If word processing or presentation apply principle from spreadsheet and database examples in indicative content.<br><br>**Do not accept charts and graphs for database justification** |

| Question | | | Answer/Indicative content | Mark | Guidance |
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| 17 | | | Possible responses may include:<br><br>• Data is a set of facts and figures without meaning (1).<br>• Unprocessed/raw data (1).<br>• Data is information that has had the structure and context removed to make it meaningless (1).<br>• Data is a collection of letters and numbers that do not mean anything (1).<br>• Any other valid suggestion. | 1 | Do Not accept “facts that are unreadable” |
| 18 | (a) | | Possible responses may include:<br><br>Sensors (1).<br>Statistical reports (1).<br>Consumer panels (1).<br>Observation (1)<br>Questionnaire (1)<br>Interview (1)<br>Any other valid suggestion. | 1 | Data collection method must suit scenario (not email) |
| 18 | (b) | | Possible responses may include:<br><br>• It is vital that PWD only collects data that is relevant (1) to the school, otherwise it will not be useful. (1)<br>• The Government data should be valid and can be trusted (1), but some parents’ and students’ reviews might not be (1).<br>• If data collected is not of the right type (1) subsequent analysis of data will be incorrect<br>• Any other valid suggestion. | 2 | **Up to two marks for a valid explanation.**<br><br>**Award a mark for use of valid data to offer support to schools**<br><br>**'so the data is accurate' is incorrect.**<br><br>**Accept “data is correct” as a starting point. This is different to “data is accurate”** |

| Question | | | Answer/Indicative content | Mark | Guidance |
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| 19 | | | **Indicative Content:**<br><br>**Benefits of using data sets:**<br>• More reliable information on trends and patterns across a wider geographical sample.<br>• Having national data sets allows meaningful comparisons of regional performance.<br>• Having national sets means comparisons can be made between the national picture and individual geographical locations.<br>• Provides a rationale for action.<br>• Any other valid suggestion.<br><br>**Drawbacks of using data sets:**<br>• As the data set becomes bigger it becomes more processing hungry which makes it difficult to analyse the data.<br>• Data mining has to take place to ensure relevant, accurate and current data is used.<br>• Duplication can occur across data sets and requires additional processes such as data cleaning.<br>• Any other valid suggestion. | 10 | **Band 3: [7-10 marks]**<br>Learner **explains** the benefits AND drawbacks of using data sets to generate these national statistics.<br>Relevant and appropriate contexts are provided to support narrative.<br>Specialist terms will be used correctly and appropriately.<br><br>**Band 2: [4-6 marks]**<br>Learner **describes** the benefits AND/OR drawbacks of using data sets to generate the national statistics.<br>Some relevant contexts are provided although opportunities will be missed to link these into the narrative.<br>Specialist terms will be used appropriately and for the most part correctly.<br><br>**Band 1: [1-3 marks]**<br>Learner has **identified** points relevant to the use of data sets.<br>This may take the form of a bulleted list.<br>There will be little, if any, use of specialist terms.<br><br>**0 marks**<br>Nothing worthy of credit.<br><br>A ‘data set’ should be defined as an organised collection of data with a common characteristic. This is not to be confused with ‘data’ on its own. Where answer only refers to 'data' and not ‘data set’ award 0 marks. |

| Question | | | Answer/Indicative content | Mark | Guidance |
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| 20 | (a) | | Possible responses may include:<br><br>**Gantt**<br>• Get to see everything related to project in single place.<br>• Helps communication between team members.<br>• Tasks can be shown against time schedule.<br>• Avoids resource overload i.e. resources for each task can be shown.<br>• Clarity of overlapping activities and task dependencies.<br>• Any other valid suggestion.<br><br>**Task list**<br>• Tasks will not/could be missed out.<br>• Allows a project team to focus on the specific tasks that need to be completed.<br>• Does not provide a clear visualisation of the overall project.<br>• Overlapping activities not clear.<br>• Very simplistic planning tool.<br>• Any other valid suggestion. | 6 | **Band 3: [5-6 marks]**<br>2 comparisons made between Gantt and task list, plus extension.<br>**Band 2: [3-4 marks]**<br>1 comparison made between Gantt and task list, plus extension.<br>**Band 1: [1-2 marks]**<br>No comparison. Individual points made in relation to either Gantt or task list.<br><br>An example of an acceptable comparison would be:<br><br>The Gantt allows the project team to see everything related to the project in a single location. This is not the case with a task list where there is no clear visualisation of the overall project.<br><br>**Comparisons must be clear. Where there is a list of statements about each in turn, these should not be considered comparisons unless there is some linking comment. A comparison, by definition, must define similarity or difference**. |
| 20 | (b) | | Possible responses may include:<br><br>• Logical prevention measures are software safeguards (1) which allow organisations to protect their data from unauthorised access (1)<br>• A non-physical form of protection (1) such as a password (1)<br>• Any other valid suggestion. | 2 | **Up to two marks for a valid description.**<br><br>This could be a definition for two marks or a statement plus example.<br><br>Examples might include passwords, firewalls, anti-virus access levels, authentication, backups, patches |

| Question | | | Answer/Indicative content | Mark | Guidance |
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| 20 | (c) | | Advantages:<br>• Tables will display the research clearly (1st) so it can be understood easily (1) and improving the quality of presentation (1).<br>• Tables will be good for presenting a summary (1st) of the research findings as the data can be sorted in order (1) by date (1).<br>• Tables organise information (1) using headings (1) so the information is easier to understand/process (1)<br>• Data is more effectively presented (1) therefore easier to access (1) and reaches a wider audience (1)<br><br>Disadvantages:<br>• Tables do not provide a visualisation of the research data (1st) so it can be difficult to see trends (1) and identify patterns (1).<br>• Tables that are too wide or long (1st) will not fit easily in a report (1). It can be difficult to make meaningful comparisons (1).<br>• Any other valid suggestion. | 6 | **One mark for identifying a suitable advantage/disadvantage OF THE USE of tables. Up to two marks for explaining each advantage/disadvantage.**<br><br>**DO NOT ACCEPT**<br><br>**Makes data easier to visualise**<br>**Not a lot of information can be shown**<br>**Tables are complicated to create**<br>**If you don't know how to read a table, it can be difficult**<br><br>**The question requires ONE advantage and ONE disadvantage.** |
| 21 | (a) | (i) | Possible responses may include:<br><br>• Do not break the law (1).<br>• Follow the GDPR / DPA (1).<br>• Never share data <u>without permission</u> (1).<br>• Any other valid suggestion <u>within context</u>. | 1 | **This must be in the context of the scenario** |

| Question | | | Answer/Indicative content | Mark | Guidance |
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| 21 | (a) | (ii) | Possible responses may include:<br><br>• Gender (1).<br>• Age (1).<br>• Ethnicity (1).<br>• Location (1).<br>• Accessibility (1).<br>• Family size (1).<br>• Family type (1).<br>• Any other valid suggestion. | 1 | **Answer must be a personal trait.** |

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