INFORMATION TECHNOLOGY

Paper 9626/02
Practical

Key messages

For this examination, the main issues to note are as follows:

Candidates need to:

have a better understanding of the concepts involved in relational databases.
be more familiar with the principles of normalisation and need relevant practice.
be more familiar with applying their theoretical knowledge to practical tasks.
have more practice and experience in the creation of database reports.
apply more precision to the timing of objects within their video clips.
ensure that they submit a single version of each completed file in the specified file format.

General comments

This was the first November sitting of this new qualification. A significant number of candidates omitted one or more of the required files to be submitted for assessment, or submitted the containers for their working files, but not the finished product (for example: files were submitted in .wlmp format, which is a container holding pointers to individual component files stored on a local (or networked) drive). When these files are uploaded the contents cannot be viewed and therefore marks cannot be awarded to the candidates. In future series, if candidates do not submit their files in the format specified in the question paper, the files will not be eligible for assessment.

Comments on specific questions

Question 1

Many candidates found this question challenging, with few identifying the requirement for only three tables and identifying appropriate field names and data types. Some candidates completed this as specified and added, key fields, field lengths and additional metadata. A significant number of candidates struggled with the concept of designing a data dictionary, simply giving a list of fields without relating these to specific named tables or including other metadata. Some candidates erroneously provided screen prints of the actual database structure as evidence.

Question 2

Many candidates successfully merged the data files containing the employees' data into a single file. Fewer candidates used formulae to add all the jobs information. A number of candidates attempted to add some of the job data but omitted other elements. Some candidates saved the completed file as a text file (in csv format) which did not retain the formulae that they had used; consequently these candidates scored few marks for this question. A number of candidates added job description fields to the staff lists rather than simply adding the job code which could then be linked to the job code descriptions table.

Question 3

Most candidates created the database as specified, but not all created it to match their data dictionaries. Some candidates only included one table for the Employees data and therefore did not produce evidence of the relationships between the tables.

Question 4

Not all candidates produced a report, although many of those who did generate the correct data using a crosstab query. A number of candidates created the report within their database package but did not save or export it in portable document format. Some candidates created a pdf document but there was no evidence of the report in their database.

Question 5

The majority of candidates performed well on this question. Most produced a video with the clips and captions in the correct order. The area where candidates tended to perform less well was the timing of the elements within the video and the accuracy of text entered within the captions. Sometimes candidates added unnecessary transitions and effects which reduced the times that the captions were visible.

Question 6

Almost all candidates removed the beeps from the sound clips. The voice over clips were frequently added to the video as specified. There were a significant number of candidates who only added **VoiceOver1** and **VoiceOver4** to the video clip. Some candidates did not add **VoiceOver2** during the **Take_Off** clip.

Question 7

The reasons for selecting mp3 rather than aiff format often resulted in correct candidate responses relating to relative file sizes but fewer candidates produced valid second answers. Very few candidates identified that reconverting to wav format did not regain the original audio quality. Most candidates identified the file size and bit rate correctly, although not all included appropriate units. Few candidates offered good answers as to why the bit rate was unnecessarily high.

INFORMATION TECHNOLOGY

Paper 9626/04
Advanced Practical

General comments

With the exception of producing labels to be used as the tickets in **Task 4**, most candidates were able to make fair attempts at each task. Centres should note, however, that many did not pay sufficient attention to all the requirements specified in each question.

Comments on specific questions

Task 1

In this task candidates were required to recreate a logo involving combining shapes and text fitted to a curve. All candidates managed to recreate the logo, but many did not maintain the proportions shown. This issue was noted in previous sessions and centres would profit by stressing the importance of maintaining proportions in graphics tasks. It was pleasing to note that the majority of candidates did save the logo with a transparent background.

Task 2(a)

In **Task 2** candidates had to create an animation with very specific requirements. The task involved a fairly simple key frame animation with text elements appearing at specified intervals. Almost all candidates managed to create an animation, but once again very few satisfied all the requirements. One very important point for centres to note is that a significant number of candidates only submitted the animation in the native format of the animation software. Centres must stress to candidates that files in this format cannot always be opened by Examiners and thus they may not be able to award any marks for the task. For future sessions only work submitted in the format specified in the question paper will be eligible for assessment.

Task 2(b)

The only issue with this part of the task is that candidates should note that the number of marks shown on the question paper indicates the number of points they should make. In this case there were four marks allocated so candidates needed to state the meaning of FPS, explain the term, and describe the effect of increasing and decreasing the number of frames per second. All candidates translated the acronym correctly, but many, perhaps thinking the term was self-explanatory, did not add the explanation. Centres would do well to cover the principles of answering questions such as these in more detail.

Task 3(a)

This task was poorly done by almost all candidates. It was clear, however, that the issue was not lack of skill with spreadsheets, but one of inattention to the details of the task. In particular, very few candidates managed to configure the options for the seating costs correctly; possibly because the pattern of specifications differed from those for the speakers or the lighting.

Task 3(b)

The syllabus states that for an 'Evaluate' task candidates should, '*discuss the importance of, weigh up the advantages and disadvantages, judge the overall effectiveness, weigh up opinions*'. With six marks available for this part of the task, candidates should have realised that they needed to detail both advantages and disadvantages of the simple financial model. Many did not list any disadvantages or even cover enough of the ways such a model could be used. Centres would profit from examining the requirements of question keywords as listed in Section 5 of the syllabus.

Task 4(a)

The first part of the task was carried out successfully by almost all candidates and indeed the vast majority managed to configure the mergefields and the conditional text for the tickets. Very few, however, used a labels facility to produce the tickets. Most candidates produced each ticket on a new page and many produced a page full of tickets for each recipient. The use of a label facility is an important aspect of mail merge and it seems that centres need to address the lack of experience of candidates in this area.

Task 4(b)

The issues for this task are similar to those for **Task 3(b)**. From the syllabus, the keyword 'Explain' requires candidates to '*Set out purposes or reasons*'. With six marks available, candidates should have listed features of mail merges and detailed their purpose, advantages and drawbacks etc. Very few approached the task in this way.

Task 5

Almost all candidates completed the first part of this task well. All managed to create the relational database and most set the data types, the primary keys and the relationships correctly.

The creation of a form with a subform was not a problem for most candidates, but once again satisfying all the requirements specified in the question was an issue. Many lost marks for not formatting the main form as detailed in the bulleted lists and very few seemed familiar with the setting of properties to control the subform scroll bars and the default form navigation controls.

In conclusion

For this session, the main issues for centres to bear in mind seem to be:

attention to the full list of specifications given in a task
the importance of covering the number of issues to match the marks allocated
the accuracy of timings in an animation
creation of labels in a mail merge
the use of form control property settings

INFORMATION TECHNOLOGY

Paper 9626/11
Theory

Key messages

Simple straightforward questions were well answered, but questions that required in depth answers lacked full explanations in the responses given. Candidates need to refer to the marks allocated when answering the question. The command words in a question are a good guide as to the level of depth required in the answer. Questions involving discuss, evaluate and analysis require comparisons between alternatives to be made.

There were a number of candidates who gave brand names rather than the generic names. It is clearly stated in the syllabus 'Note that no marks are awarded for brand names in candidate responses.'

Candidates should think very carefully about what is being asked in a question and answer the question as it has been set. They should be reminded to read each question thoroughly to ensure they are clear of the focus and that they can produce an answer that is relevant to the question set.

Candidates should use the appropriate technical terminology when answering questions. At this level of study vague, generalised answers will not be given credit.

Candidates should be encouraged to write their answers clearly in the spaces provided on the examination paper.

If candidates use additional sheets or blank spaces within the question paper the continuation of the answer should be clearly indicated. It is also essential, particularly in questions that require formulae that candidates indicate in some way the answer which is to be marked if any draft work has been produced.

It would appear that candidates are repeating phrases from text books or websites based on a single word that they see within a question rather than reading the whole question and responding appropriately to the given scenario. Teachers would be well advised to further develop the skills of their learners beyond recalling points of information to enable them to gain better results at this examination level.

General comments

Overall, candidates did not appear to have been well prepared for this assessment.

Candidates, at times, showed a reasonable level of understanding, although many areas of the syllabus seemed not to have been covered, in enough detail, by the candidates.

Questions requiring simple and straightforward answers were done well, while the answers to more stretching questions needed to contain more explanation or discussion. This was particularly the case with the eight mark questions.

In this paper, as with any exam paper at this standard, candidates are required to show a level of understanding as well as a depth of knowledge.

Many candidates saw a phrase which they recognised from the syllabus and wrote all they knew about it rather than answering the question set. This was particularly noticeable in **question 3**.

The syllabus recommends that an IGCSE (or equivalent) qualification in ICT has been obtained prior to commencement of the course. At A level candidates have to be able to understand basic concepts such as input, output and storage, but it was clear from some candidates' responses that many did not have this knowledge or understanding.

Comments on specific questions

Question 1

Generally, candidates did fairly well on this question but appeared to perform better on part **(b)** than part **(a)**. The majority of candidates did not gain more than one mark out of the two available. Many candidates thought that a compiler translates machine code into a high level language program and several thought that a linker is used in conjunction with an interpreter.

Question 2

The vast majority of candidates gained full marks for this question.

Question 3

Candidates did not do so well on this question. Parts **(d)** and **(e)** produced the best answers with part **(c)** the weakest.

(a) Most candidates managed to gain at least one mark with a few gaining two or more marks. Candidate answers concentrated on roads in general rather than the two mentioned in the stem. Many candidates defined what is meant by direct data sources instead of answering the question which was how would the data be collected. The most popular correct answers related to the use of questionnaires, interviews and the use of sensors.

(b) Most candidates gained at least one mark with a general description of the features of an interpreter. Many, however, were unable to describe it in sufficient detail. Very few candidates realised that the activity of gathering data involved the expense of employing people to gather the data or that it may involve the purchase of equipment such as data logger/computers/printers. Very few candidates managed to include issues related to the small sample size. A number gave the simple answer that data would be out of date without qualifying this statement.

(c) This part of the question elicited the weakest responses with many vague answers given. Very few candidates' answers related to errors in the collection of data or how these might occur.

(d) Most candidates gained at least one mark and a number gained two marks, but very few gained all three marks. Most popular correct answers related to the fact that data entry would be faster or that less storage space would be required. Very few candidates referred to easier validation or increased accuracy of data entry. Some candidates did not mention the word storage when saying that less space would be required. At this level it is expected that candidates use technical terms accurately.

(e) Many candidates were able to state that use of code B was confusing. Few candidates were able to mention that the approximate age of driver was too vague. Very few candidates mentioned that there might be many makes of cars starting with the same letter so causing confusion.

Question 4

Candidates did not do very well at all on this question. As has been stated in previous reports, in the syllabus it clearly defines the command word 'evaluate'. Candidates must discuss the importance of, weigh up the advantages and disadvantages, judge the overall effectiveness and weigh up their opinions.

Candidates gave answers which described how the output devices would be used in the scenario, often inaccurately, rather than evaluating their use. The question did allude to the use of the devices, so some candidates did gain marks at a low level.

Some candidates could not identify a type of printer and some described the use of input devices in a response to a question about output devices. Some candidates referred to storage devices.

Question 5

This question was not well answered, with few candidates gaining more than two marks.

(a) Many candidates made use of COUNTIF() where the cell ranges provided were incorrect followed by incorrect use of commas, hyphens and brackets. The most popular range of cells referred to was K2:L20. Some candidates had used COUNT(), others had used COUNTA(). Very few candidates correctly identified the need for a COUNTIFS function.

(b) Many candidates seemed to realise the need for a filter on column K and L for "-" but were unable to articulate this. Frequently candidates mentioned 'Print' but did not make it clear regarding the need to have selected column N first. A number of candidates mentioned brand names in their answer. The use of which is proscribed by the syllabus.

Question 6

This question was fairly well answered with the large majority of candidates gaining two or even three marks.

Again the use of brand names was noticed in candidates' answers. There was also a great deal of confusion in the minds of some candidates regarding the use of > or <.

Question 7

Many candidates had described the general use of simulators rather than provide an evaluation. Popular correct answers were generally related to saving costs on fuel, set up/maintaining the simulator could be expensive and that it was safer for the pilot or that it would cost a lot to repair a plane. Often, however, it was not clear what the advantage was in many of the candidates' comments. The comments made on **question 4** were applicable here without the caveat that uses would be given credit. If candidates do not provide advantages and/or disadvantages in an evaluate question such as this, they will not be able to gain any marks.

Question 8

This question was not very well answered with the majority of candidates unable to gain any more than one or two marks for the whole question. Part **(a)** in general elicited few learned definitions and candidates tried to gain marks by describing what they could see in the image presented with the question. There was a lot of misunderstanding in the use of terms such as field and record with very little evidence of the appropriate application of technical language.

(a) (i) Most of the answers seen were quite vague and candidates who understood the term one to one were in the minority.

(ii) Again, a lot of vague answers were in evidence, but there were a small number of candidates who understood the term.

(iii) Very few candidates gained marks for this question. Where marks were gained, this mainly related to the fact that this type of relationship is not allowed, or 'many students study many subjects'. In some instances, examples were provided which did not relate to the tables shown; instead candidates had talked about hotel rooms or products in general.

(b) Again, very few candidates gained marks for this question. Where one mark was achieved, this related to the prevention of duplicate data/redundancy of data. Very few candidates seemed to know what was meant by the term 'referential integrity'.

Question 9

(a) The most popular answer related to the fact that it was created by software manufacturers. Very few candidates were able to state that the software was covered by copyright. Even fewer candidates were able to state that the source code is kept secret/private.

(b) Many candidates were confused between file format and applications. The most popular answer related to, 'can be used by many applications/software'.

Question 10

Most candidates gained at least one mark with the more able candidates gaining at least two marks. The popular correct answers referred to the increase in sample rate resulting in better quality and increased file size. Many of these candidates then repeated their answers referring to lower sample rate resulting in smaller file size and lower quality. Very few candidates had stated the rate is measured per a given period of time or per second.

Question 11

Very few of the candidates seemed to have a clear idea of the distinction between real time and batch processing. Correct answers generally related to real time processing being used to control rockets and that batch processing would be used to pay wages. In some instances, candidates were able to state issues surrounding immediate action being required when controlling the rocket. In other instances, confusion was evident between the two types of processing, as many referred to the use of batch processing in the control of rockets and real time processing being used to collect data for the payroll.

INFORMATION TECHNOLOGY

Paper 9626/12
Theory

Key messages

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General comments

Overall, candidates did not appear to have been well prepared for this assessment.

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(a) (i) Most of the answers seen were quite vague and candidates who understood the term one to one were in the minority.

(ii) Again, a lot of vague answers were in evidence, but there were a small number of candidates who understood the term.

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INFORMATION TECHNOLOGY

Paper 9626/13
Theory

Key Messages

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It would appear that candidates are repeating phrases from text books or past paper marks schemes based on a single word that they see within a question rather than reading the whole question and responding appropriately to the given scenario. Teachers would be well advised to further develop the skills of their learners beyond recalling points of information to enable them to gain better results at this examination level.

General comments

Overall, candidates did not appear to have been well prepared for this assessment.

Candidates, at times, showed a reasonable level of understanding, although many areas of the syllabus seemed not to have been covered by the candidates.

In this paper, as with any exam paper at this standard, candidates are required to show a level of understanding as well as a depth of knowledge.

Many candidates saw a phrase which they recognised from the syllabus and wrote all they knew about it rather than answering the question as set. This was particularly noticeable in **Question 12**.

The syllabus recommends that an IGCSE (or equivalent) qualification in ICT has been obtained prior to commencement of the course.

Questions which required a recall response were handled well by most candidates particularly questions which required one word answers or in the case of the first two questions those based on placing a tick next to the correct statement.

Candidates appear to struggle to give accurate and detailed responses to questions in which they are required to apply their knowledge and understanding to a given scenario.

Questions which require higher order thinking skills and the ability to analyse and evaluate resulted in weak responses.

Comments on specific questions

Question 1

Generally, candidates did well on this question with the majority gaining at least three marks. Incorrect responses seemed to be distributed evenly amongst the distractors.

Question 2

This question produced even better responses than **question 1** with many candidates gaining all four marks. A small minority of candidates thought that the internet was smaller than an intranet and some thought that the World Wide Web and the internet was the same thing.

Question 3

This question was not particularly well answered though candidates fared better on part **(a)** than part **(b)**.

(a) Very few candidates managed to give good descriptions of the correct use of the public and private keys in encrypting and decrypting data. Many appeared to be side-tracked by the question and described the symmetric method of encryption. There was a lot of evidence to suggest that candidates had learned these methods off by heart, but were unable to clearly express which was which.

(b) Responses to this question varied in quality. Some candidates recognised that only one key was used but incorrectly named it, often referring to it as the 'primary key'. Very few appeared to understand the topic fully.

Question 4

Responses to this question were very poor. Candidates gave answers which described the features and functions of the software rather than evaluating and comparing them. A comparison requires both sides of the argument (i.e. describe why one software was more suitable for a particular task than another software option).

As has been mentioned in previous reports, evaluation requires the candidate to discuss the importance, weigh up the advantages and disadvantages, judge the overall effectiveness, weigh up their opinions, of a number of options. It is important that comparisons are made rather than just giving features.
Candidates gave answers which described how the software would be used to produce a blog rather than comparing types of software.

Question 5

This question was well answered with candidates describing the different groups of people who were affected by the digital divide with good supporting reasons. Most candidates made at least four good points.

Question 6

This question was not well answered, on the whole, with the large majority of candidates gaining their marks on **part (a)** only.

(a) Many candidates correctly identified the correct value for the named cell in the question. Good descriptions were given for the value in the cell displaying the maximum value but descriptions for the VLOOKUP formula tended to be inaccurate.

(b) Most candidates showed little understanding of the structure of a test plan and how to make use of it in relation to the scenario. Candidates tended to give descriptions of irrelevant terms like proof reading or validation.

Question 7

(a) The majority of candidates did not appear to have read the question carefully, which clearly stated that fig 2 was not part of the database. Many described how they would create a relational database which was totally unnecessary. A number of candidates ignored the database element of the stem and treated it as a spreadsheet, producing complex nested if solutions which were not required. A number of candidates seemed to know what a calculated field was without being able to describe how one would be created.

(b) Many candidates gave confused responses describing how they would produce a report and the steps they would take to achieve this. They tended to give vague statements which lacked sufficient detail to enable the examiner to follow their explanation.

Question 8

Many candidates provided reasonable descriptions of benefits and drawbacks of CCTV monitoring, showing an understanding of the topic. However, some candidates repeated the same points or did not describe sufficient benefits and drawbacks to gain the higher marks. Most came up with the benefit of it being used as evidence and the drawback of invasion of privacy.

Question 9

Overall candidates did not do particularly well on this question with most managing to make only one valid point. Many responses recognised that the original file format was incompatible with the different software types. However, candidates struggled to express a clear understanding of the topic and what was required to load the file into a spreadsheet.

Question 10

This was not well answered at all with only a few candidates gaining one mark. Many candidates gave vague answers to this question by describing spreadsheet software in superficial, general terms without mentioning the feature or characteristics, or when they did, they struggled to describe in sufficient detail why they were suitable for modelling.

Question 11

This question probably produced the weakest responses of all questions on the paper. The majority of candidates appeared to have a poor understanding of MIS and could only provide vague comments in an attempt to describe the features of such a system. Few responses described why the statement within the question was justified.

Question 12

Despite the question clearly stating that the video-conferencing hardware and software had already been bought and tested, many candidates gave lengthy irrelevant answers describing these processes.
Most candidates, however, did go on to make at least two valid points.

Question 13

Many responses gave weak descriptions of forward and backward chaining which suggested that they only had a basic understanding of this topic. Many tried to gain marks by answering the question describing a generalised expert system without showing any understanding of the terms.

INFORMATION TECHNOLOGY

Paper 9626/32
Advanced Theory

Key messages

As set out in the syllabus, there are command words that require candidates to 'Evaluate, Discuss and Analyse'. **Question 4** used the command word 'Evaluate' which requires candidates to discuss the importance of, and weigh up, the advantages and disadvantages, and to judge the overall effectiveness of any topics as set in the question and to weigh up their own opinions. To score good marks in questions that require evaluation, candidates must provide both sides of the argument.

Similarly the command word 'Discuss' requires candidates to give important arguments for and against a topic as set in a question. Discussions often require a conclusion so a mark is usually available for a good, reasoned conclusion which does not merely repeat the discussions already given.

The command word 'Analyse' requires that candidates explain the main points of the topic in detail and explain their effectiveness and characteristics.

Centres should ensure that candidates read questions carefully before attempting their answers as candidates appear to look for, or, 'spot' 'key words' in the question and then proceed to write answers based on those keywords, missing the emphasis of the question asked: this then often leads to little application of their knowledge to the question as set. This type of answer may score a few marks but will not give access to the full range of available marks.

Overall, it appeared that candidates were not well prepared for this examination.

Comments on specific questions

Question 1

This question was not well answered with candidates scoring very few marks. There was much confusion with basic program flowcharts. A system flowchart should use appropriate, conventional shapes for objects and show how the system would update the transaction and master files each week.

Question 2

Good answers included a definition of both virtual and augmented reality. However, the question referred to these technologies being used in medicine and this was very rarely referenced in candidates' answers. Weaker answers confused the two types of reality or did not explain the difference in any detail.

Question 3

This question required candidates to explain how to create an image from a group of pre-drawn shapes. Good answers should have referenced creating a new canvas on which to create the final image, copying and pasting some of the shapes, rotating and flipping other shapes to ensure that they are in the correct orientation. Weaker answers referred to basic techniques available in most packages e.g. cropping the image and/or resizing certain shapes. Also, as this is an A level paper, the correct terminology is required in order to gain the higher marks and this was not used in many of the answers, e.g. referring to 'colouring in a shape' instead of using the fill tool.

Question 4

This question was answered quite well by some candidates who were able to discuss the other methods available for creating backups. Many answers referred to descriptions of tape-based, hard disk-based and cloud-based storage but then did not evaluate the advantages and disadvantages of each method. Weaker answers tended to give a list of points about each backup method or did not discuss all three methods, missing one or more of them in their answer. To score good marks in questions that require evaluation, candidates must provide both sides for each of the methods.

Question 5

(a) This question required candidates to describe the stages of the 'waterfall' method of development to produce a new game application, not merely to describe the different aspects of a system life cycle. Good answers should have included that the 'waterfall' method is a linear approach to software development, the requirements are analysed to produce an overview of what is required, system flowcharts and/or DFDs are created during the design stage to enable coding to commence. Weaker answers included reference to analysis, design and testing but did not gain higher marks as there was no further description that linked to the 'waterfall' method.

(b) Because of the weak answers to **Question 5(a)** many candidates also did not gain marks on this part of the question. Many described the benefits and drawbacks of each section of the system life cycle or of the different types of testing instead of discussing the benefits and drawbacks of the waterfall method as a whole. Good answers should have included reference to a structured approach through the discrete stages to provide identifiable milestones, the requirements not always being fully known before software is created and designers not being aware of future difficulties of designing a new software feature.

Question 6

This question required candidates to explain how you can affect the perceived quality of the sound stored in an audio file by changing the bit rate. Most candidates were able to gain marks on this question and their answers included reference to an increase in bit rate improves the quality or vice versa and some then expanded this to describe lossy compression. A further explanation of what the effect of changing the bit rate would be, e.g. distortion of sound heard as bubbling would have gained the higher marks.

Question 7

Candidates were required to discuss the benefits and drawbacks of White Box testing. Good answers should have given both benefits and drawbacks of this type of testing, e.g. White Box testing is a testing method that allows the tester to look inside the system and therefore the testing is more thorough could be the benefit and then the fact that White Box testing requires the tester to have an in-depth knowledge of the system and/or be a highly skilled programmer could be the drawback.

Question 8

(a) This question was not well answered, as only a few candidates were able to describe the rights for people who have their data stored and processed by companies. Many only listed the principles of the DPA. Good answers should have referenced the right of access to a copy of the information held along with a reason for the processing of this data and the right to claim compensation for damages by a breach of the act.

(b) This question required candidates to describe two criminal offences that may be committed by data controllers if they fail to abide by the DPA. Many candidates discussed the offence of breaking the DPA but did not link this with the role of the data controller. Good answers should have included the failure by the data controller to provide accurate information when registering, the failure to comply with any enforcement order and the processing of data that has not been correctly registered.

Question 9

Most candidates could explain different reasons for the degradation of a Wi-Fi signal and thus what has to be carried out to stop this happening, e.g. remaining within the range of the Wi-Fi access point, ensuring that walls, insulation, etc. are not causing an obstruction to the signal and ensuring that other devices, which could cause interference, are removed. However, some candidates compared Wi-Fi to cables referring to trip hazards, etc. which gained them no credit. Weaker answers only listed a few issues with no explanation.

Question 10

Most candidates gained credit for referring to the need for technical documentation, test plans and the program listing but these points were not described and very few reasons were given as to the requirement for inclusion. Good answers should have referenced the need for a list of variables so that the programmer can follow the parameters as they are used and input and output data formats so that the programmer can write code that will match.

Question 11

Candidates showed some understanding of JavaScript and many were able to include 'If' statements that allowed for the correct selection of the required message. Weaker answers did not use accurate naming conventions for variables and calculations for the time were mixed up.

Question 12

Candidates did not answer this question well. There was confusion between morphing, tweening and transitions and many candidates described the actual creating of the cartoon images. The syllabus expects candidates to be able to understand the use of these (section 17 of the current syllabus). Good answers should have referred to the setting up the frames as key frames and then the filling in of additional frames between the frames 1, 2, 3, and 4 in order to create a smooth movement.

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Advanced Theory

Key messages

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As set out in the syllabus there are command words that require candidates to 'Evaluate, Discuss and Analyse'. **Question 3** used the command word 'Evaluate' which, requires candidates to discuss the importance of, and weigh up, the advantages and disadvantages, and to judge the overall effectiveness of any topics as set in the question and to weigh up their own opinions. To score good marks in questions that require evaluation, candidates must provide both sides of the argument.

Similarly the command word 'Discuss' requires candidates to give important arguments for and against a topic as set in a question. Discussions often require a conclusion so a mark is usually allowed for a good, reasoned conclusion which does not merely repeat the discussions already given.

The command word 'Analyse' requires that candidates explain the main points of the topic in detail and explain their effectiveness and characteristics.

Centres should also ensure that candidates do not repeat the question or part of the question in their response, as was observed in **Questions 4** and **7**, as this will not gain any credit.

Overall, it appeared that candidates were not well prepared for this examination.

Comments on specific questions

Question 1

(a) (i) Test Plans need to be created in order to provide an overview of the testing and to ensure that legal regulations are met. Good answers explained the importance of having the test plan. Most candidates were unable to answer this question well; answers lacked details and were superficial referring to what testing is instead of the importance of the test plan.

(ii) This question was not answered well. Few candidates seemed to know what a testing strategy is but instead concentrated on explaining the different types of testing that are available, e.g. discussing black and white box testing and/or alpha and beta testing.

(iii) Candidates were required to discuss the advantages and disadvantages of Black Box testing. Good answers should have given both benefits and drawbacks of this type of testing, e.g. Black Box testing is a testing method that is easier to use since the internal structure is not known to the tester and they do not need to know the programming language could be the benefit and then the fact that Black Box testing does not test all internal pathways through the software could be the drawback.

Question 2

Most candidates could describe what computer-aided manufacturing is but only a few could then relate this to its use to produce the tail fin. The question required a discussion so both benefits and drawbacks were required for high marks to be awarded. Good answers referred to e.g. there was a consistent/higher accuracy during production of the tail fin, the tail fin was produced quicker than more traditional methods, the software would be expensive to purchase/develop/maintain and there was additional costs to train or hire users of the system. Weaker answers referred to the generic concept of cost but then added little detail as what would initiate the cost when producing the tail fin or these answers discussed the use of computer-aided design within the process but not linking this to the manufacture or CAM.

Question 3

This question was answered quite well by some candidates who were able to discuss the other methods available for the research. Many answers referred to descriptions of document analysis, questionnaires and observation but then did not analyse the advantages and disadvantages of each method. Weaker answers also included a description of interviewing as a method which was given in the question and thus no credit was gained. To score good marks in questions that require evaluation, candidates must provide both sides of each of the issues.

Question 4

This question was answered well by many candidates who described the purchase of each item individually and calculated the amount left in the customer's account accurately, showing that the first two items could be purchased, but there were insufficient funds to purchase the third item. Weaker answers discussed scanning the bank card, and entering and accepting the pin which was given in the question and therefore gained no credit. These answers also discussed the receipt of one time passcodes (OTP) and the method of purchasing all three goods together, both of which did not gain credit. To gain higher marks for this question, candidates needed to ensure that they described this process in detail.

Question 5

This question required candidates to create a data dictionary using the list of details for customers that was given in the stem. Good answers should have included a suitable field name and data type along with a suitable field size and possible validation for these fields. Many candidates were able to suggest some suitable fields and their data types but the list of fields was rarely complete and did not include a customer_ID as a key field or a field to establish whether the customer was over 21 or not. Good answers should also have split the address field into its constituent parts to enable searching of the database in the future. Weaker answers created a form for the database and did not give any information about the fields required.

Question 6

Candidates were required to describe how IT has changed the sports experience for people. Good answers should have included references to the design of equipment to enhance performance, e.g. running shoes, the use of monitoring equipment to improve performance of the athlete by checking heart rate, etc. Weaker answers tended to describe the use of television so that people can watch their favourite sport.

Question 7

(a) This question was not answered well. Few candidates seemed to know what a 'default gateway' actually was, with many candidates repeating the stem of the question and defining the gateway as a connection between the router and the internet.

(b) Most candidates could describe some benefits and drawbacks of using wireless technology to connect devices to the router, e.g. gives the person the ability to move around the house, safer as there are no wires to trip over, the speed of data transfer is lower than for a cabled connection and the person will have to remain within range of the access point in order to get connection and walls can cause interference. However, there was a lack of detail in discussing these benefits and drawbacks within the home. Weaker answers only listed a few benefits and/or drawbacks.

Question 8

(a) This question asked candidates to draw an activity network diagram for building a new house. Candidates were expected to use the individual tasks given in the question to create this diagram. Good answers included a suitable diagram that showed how each of the tasks linked together but many did not include a start and finish point and often arrows to show the direction through the diagram were missing. Weaker answers missed out some tasks completely or created a diagram that was not possible.

(b) This question required candidates to use their answer to **Question 8(a)** to find a critical path through the tasks. Many candidates were able to establish the correct path, showing other paths that were eliminated and to then calculate the correct number of days for their diagram. Weaker answers only gave a value for the number of days for the critical path with no indication of where this value had come from.

Question 9

The syllabus requires candidates to be able to describe how project management software tools can be used and they are expected to be able to answer this type of question. Most candidates described calendar tools or expert systems and therefore gained little or no credit.

Question 10

This question required candidates to describe the different techniques available in image editing software to alter images for use in the advertising of products. Good answers should have referenced the facilities to change the colour balance so that a warm/cool mood can be created on the image, changing the brightness so that the photograph does not look like it was taken on a dull day. Weaker answers referred to basic techniques available in most packages, e.g. cropping the image and/or resizing a photograph and did not then continue to describe the technique or a reason for why it would be used.