# APPLIED INFORMATION & COMMUNICATION TECHNOLOGY

> **Paper 9713/12**
>
> **Written A**

## Key messages

Overall, candidates appeared to have been fairly well prepared for this assessment.

Candidates showed a reasonable level of understanding though there are still areas of the syllabus of which many candidates appear to lack detailed knowledge.

On much of the paper some expansion and detail is required. It is not sufficient to give brief answers.

Where alternatives are given in the question and reasons why a particular one should be chosen it is important that comparisons are made rather than just giving features.

Questions requiring simple and straightforward answers were done fairly well, while the answers to more demanding questions needed to contain more explanation or discussion.

Centres are again reminded that this is 'Applied ICT' and candidates are expected to apply their knowledge to the context of the scenario. It is important for candidates to realise that they need to refer back to the scenario when answering questions.

Candidates should wherever possible refer back to the scenario when answering questions. Where a question specifically asks them to do this they will find it difficult to gain marks if they do not.

## General comments

Quite often it appeared that candidates rushed into giving their answers whereas they would have been better advised to list their thoughts in rough before choosing, and elaborating on, items from their list that would be appropriate both to the scenario and to the phrasing of the question.

Candidates must read questions carefully before answering. A number of questions required descriptions which many candidates failed to provide in sufficient detail. Question **6(a)** required comparisons with other input devices but these were often lacking.

## Comments on specific questions

### Question 1

**(a)**     Candidates did fairly well on this question. Most candidates gained marks for either a benefit or a use for each one. A common failing was giving the same benefit for laser and inkjet printers, despite the question requiring different benefits.

**(b)**     Many candidates failed to provide sufficient detail with a number just saying that questionnaires and interviews involved the asking of questions with no further expansion. Each part was answered consistently with candidates unable to show greater knowledge of any one method over any of the others.

**(c)** This question was slightly better answered than the other parts of **Question 1** despite more candidates failing to attempt it than the other parts. One in nine candidates did not provide a response. Most candidates were able to describe two or more items whilst the more able candidates often achieved 5 or more marks. Some candidates failed to gain marks for including items that would only be found in user documentation.

## Question 2

**(a)** The majority of candidates were able to give one good reason with an appropriate measure. It was rare for candidates to give the reason without a matching measure. Many candidates failed to include more than one good reason.

**(b)** Answers to this question were often very brief, lacking in detail with only one or two good points being made. Candidates often seemed preoccupied with describing the data produced by the system rather than how it would be used.

## Question 3

**(a)** Candidates did reasonably well on this question with better answers being given for part **(i)** than for part **(ii)**.

Many candidates gave at least one good reason in part **(i)** usually to do with reducing file size but only the most able were able to provide two good reasons. In part **(ii)** the majority of candidates gained one mark, usually for the use of text highlighting but only the most able could make additional points.

**(b)** Many candidates failed to provide sufficient detail in their answers for this question, with the majority unable to make additional points, other than the use of grey scale.

**(c)** More candidates failed to attempt part **(i)** than any other question on the paper. Those candidates that did attempt it usually achieved at least one mark for partially describing the process in part **(i)**, but despite seeming to have some grasp of the topic were unable to describe any benefits for part **(ii)**. This part of the question elicited the weakest answers on the paper. Many candidates used answers they would later repeat for question **5(b)** which had little relevance here.

## Question 4

**(a)** This question was the best answered on the paper. The majority of candidates gained at least two marks but a surprising number felt that the No_In_Stock field should be text/alphanumeric.

**(b)** This question was not as well answered as expected with candidates often confusing verification with validation and vice versa.

Part **(i)** was slightly better answered than part **(ii)** but candidates frequently gave validation checks in their description.

Part **(ii)** answers sometimes included the definition of validation but even then, the descriptions of the checks lacked sufficient detail to gain marks. Frequent wrong answers were down to inappropriate choices of the validation checks.

## Question 5

**(a)** This question was not well answered with either a poor choice of end effector or, where a correct choice was made, a lack of appropriate description of its use. The context of the question was changing tyres on a vehicle yet few candidates related their answers to this.

**(b)** This question was much better answered, with the majority of candidates making at least two good points.

**Question 6**

**(a)** Most candidates managed to make one good point, answers were frequently lacking in detail with many referring to cheaper, quicker etc. without saying in what regard or in comparison with which device.

**(b)** This part of the question was much better answered than part **(a)** with the majority of candidates gaining at least two marks. Candidates were able to describe certain parts of the formula but often failed to put it in the context of the question. Most were able to explain the comparison but failed to put enough detail in their answer relating to the VLOOKUP part of the formula.

**(c)** This question was well answered despite a surprisingly high number of candidates failing to attempt it. The diagram, when present, was often well labelled. The descriptions were good on the whole; with the majority of candidates gaining ate least half marks.

# APPLIED INFORMATION & COMMUNICATION TECHNOLOGY

> **Paper 9713/02**
>
> **Practical Test A**

## General comments

The majority of candidates attempted and completed most elements of the paper. There were significant differences in the range of results from Centre to Centre and from candidate to candidate within Centres. The paper gave a good spread of marks although this appeared to be more challenging to some candidates than previous sessions. Candidate errors were spread evenly over the sections of the paper, although the application of candidates' knowledge to produce appropriate database structures with the given naming conventions caused a number of candidates some issues. A significant number of candidates included the database structure and attempted the naming conventions but did not include evidence of the correct data being imported for all tables, with the exception of the Branch table.

A small number of candidates failed to print their name, Centre number and candidate number on some of the documents submitted for assessment. Without clear printed evidence of the author of the work, Examiners were unable to award any marks for these pages. It is not acceptable for candidates to annotate their printouts by hand with their name as there is no real evidence that they are the originators of the work.

Some candidates omitted one or more of the pages from the required printouts. Some partially completed the database report but only printed the first page. Some candidates did not realise that if printouts contained a significant number of pages that it may be worth checking their table structure or query criteria, extremes with a significant number of pages were seen. A small number of candidates submitted multiple printouts for some of the tasks and failed to cross out those printouts that were draft copies. Where multiple printouts are submitted, an examiner will only mark the first occurrence of each page. Candidates must be aware of the dangers of cutting and pasting cropped versions of evidence in order to save space on a sheet. It often looks impressive but this invariably leads to the loss of crucial data which could achieve marks. Overall the paper performed very well.

## Comments on specific questions

### Question 1

Almost all candidates created an Evidence Document, as shown by their subsequent printouts of this document.

### Question 2

Although almost all candidates used a LEFT function to extract the data from the payroll number in row 2, a large number provided no evidence that this formula was replicated. As the question specified "For each employee" it was necessary to show evidence that replication had taken place as this was part of the method used to create the solution.

### Question 3

Although almost all candidates used a MID function with the correct cell reference and parameters to extract the data from the payroll number in row 2. A large number provided no evidence that this formula was replicated. As the question specified "For each employee" it was necessary to show evidence that replication had taken place as this was part of the method used to create the solution.

**Question 4**

This question was completed well by most candidates, with evidence provided for the inserted column, although there were a significant number of candidates who included data entry errors into the text "Full name". The most common of these errors related to incorrect case.

**Question 5**

Many candidates performed this task as specified using either &'s or the CONCATENATE function, although there were a variety of incorrect solutions seen. A small number of candidates set the name as Forename: Surname, others ignored the punctuation between the names, either omitting a space or the colon. As with questions 2 and 3, replication was not always demonstrated to the Examiner. A small number of candidates solved the task but did not use the most efficient methods, for example using =D2&":"&" "&C2 or the equivalent using the CONCATENATE function.

**Question 6**

The creation of this table was completed well by many candidates although some did not use the field names specified in the question paper. Almost all candidates selected the most appropriate data types and set the PayrollNumber field as the primary key. A small number of candidates also imported the Forename and Surname fields and/or included an ID field. Most candidates included the evidence of the table structure in their Evidence Document but fewer candidates included evidence of the table contents.

**Question 7**

A significant number of candidates did not call the tables the names specified in the question paper, many tables having the M16 prefix in the table names or calling the PayGrade table Paygrade or Pay_Grade. Many more candidates did not follow the case or naming conventions given in the question. The most appropriate data types were selected by the majority of candidates. Most candidates showed evidence of their table structure. Key fields were generally correct for the tables although a few ID fields were seen as generated by the wizard in Microsoft Access.

**Question 8**

This question was rarely completed well, there was often evidence provided for data restriction to one of the two fields but seldom to both. Apart from the use of an input mask (or similar technique to trap out these data entry errors), few candidates realised that the field length should also be restricted to 2 characters (saving 253 characters per record of memory and storage capacity) in order to produce an efficient solution. Some candidates attempted this using validation rules and did not achieve a successful solution.

**Question 9**

Most candidates created all three relationships correctly. Where this did not happen, it is important for candidates to study the data and determine which fields contain unique data before trying to create the relationships used to link the tables. In a small number of scripts the relationships were seen, but the type of relationship (e.g. one-to-many) was not visible.

**Question 10**

Most candidates entered the data into the Branch table as specified, however some decided to call the field Telephone rather than Contact. Some candidates did not show evidence of the table structure but did show evidence of the contents. Where candidates had erroneously set the data type for this field as numeric rather than as alphanumeric (text), all leading zeros were lost so it was not possible to award marks for the data entry.

**Question 11**

This question elicited a variety of responses: from candidates who fully achieved the task and generated a solution looking identical to the example in the question, to those who were unable to group the data as specified. Almost all candidates performed the underlying query as specified. Some of the few candidates, who did not, submitted more than one printout or attempted to merge screen shots of two independent reports, each based on their own query.

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**Question 12**

The majority of candidates created a query and calculated the field at run-time as specified. A significant number of candidates did not display all of their method (by stretching the column in the query design view) so the entire formula could not be verified as correct by the examiner. Some candidates showed evidence of the calculation but did not screenshot the results for the first 20 records.

**Question 13**

This question gave a very wide range of marks due to a huge diversity in candidate responses. Most candidates added the given text correctly but few managed to explain the purpose of the report despite being given a clear indication in the question paper. Some candidates ignored the instruction to place the text and candidate details on the third line, placing this text in a number of different places in the report. Grouping was often incorrect as two sets of grouping were required, one within the other. The detail row was often as specified on the question paper. The summary data for each state was sometimes omitted, or in other cases placed instead of the workers details in the detail row.

**Question 14**

This proved a challenging question for many candidates. Selection of an appropriate chart type for the given data caused some candidates a problem. Some candidates adequately labelled their chart axes, but many more did not title each axis with an appropriate title. The chart title was frequently short and did not describe the purpose of the chart, many created this to suggest that each state was working rather than the employees/staff/workers within each state. There were many candidates who created an appropriate chart but did not produce adequate labelling.

**Question 15**

Almost all candidates printed their Evidence Document.

# APPLIED INFORMATION & COMMUNICATION TECHNOLOGY

| Paper 9713/32 |
| Written B |

## Key messages

Many candidates appeared to have good subject knowledge and some good technical descriptions were seen. However, a significant number of candidates did not appear to have sufficient technical knowledge to answer the questions with confidence: too many muddled and inaccurate answers were seen to questions that should not have caused difficulty. Basic knowledge appeared to be lacking in the questions that required at least some technical knowledge e.g. the question about the structure of an email address elicited a few good answers but most were superficial and many were inaccurate.

Many candidates did not apply their knowledge to the given scenarios or to the context set in the questions. While candidates appeared to know the syllabus content quite well, they failed to score the marks as their knowledge was not applied appropriately. It was, once again, apparent that some candidates did not read the question carefully before attempting to answer it and seemed to look for 'key words' in the question. Such candidates wrote answers based on the 'key words' without applying their knowledge to the question or scenario. This was most obvious in the question about the advantages and disadvantages of 'just in time' ordering of goods where many candidates described how the process worked but did not answer the actual question at all. Candidates must read the scenarios carefully and they must apply their knowledge when answering the questions.

A few candidates did not attempt to answer all the questions and consequently lost the opportunity to score the marks. Only a few candidates wrote extended or replacement answers in the white spaces on the exam paper or added extra pages to the answer booklet – this is not to be recommended especially as these candidates made no reference or indication that they had done so leaving the examiner to find the additional answers and risk not having them marked. While examiners are trained to look for, and to mark, additional answers, candidates should not expect examiners to search every examination paper for a few lines of orphaned writing for every candidate. Centres must train their candidates, that where they write additional or extended answers outside of the lines supplied, to indicate on the main question paper that they have extended their answer and to indicate where the examiner can find the additional parts to their responses – a simple 'continued on...' would suffice. It should be noted that the number of lines supplied for each answer is deemed adequate for candidates to use and there should really be no need to extend answers beyond these lines. Further, if any additional space is required, then candidates should write on the officially supplied paper and attach this to the question paper and not write in blank, white spaces on the main question paper.

When answering the questions, candidates must read the rubric and give the required number of responses where appropriate. Candidates who give too many or too few responses risk losing marks. Where a question asks for e.g. three descriptions then only the first three descriptions will be marked and subsequent descriptions will be ignored by the marker.

## Comments on specific questions

### Question 1

**(a)**     This question was not well answered as many candidates focussed on how VoIP works (this would have answered **part (b)**) or compared it to video-conferencing. The question required candidates to discuss the use of VoIP for voice calls and focus their answers on the context given in the scenario. It was expected that candidates discuss the issues relating to the actual 'use' of VoIP by the staff and while a number of candidates did this, pointing out that e.g. VoIP calls can cost less than 'regular/normal' telephone calls, especially for international calls, or that VoIP can suffer from poor quality due to network issues, many candidates gave generic answers about 'setup costs' or that

'documents cannot be shared', or the need to be connected to the internet – which did not score the marks.

**(b)**     This question was about how the software enables VoIP to actually work. Good answers explained how the sounds of voices are captured, converted by codecs and sent as IP data packets between the participants in the voice calls. Poor answers lacked the technical details, referred to 'servers and operators' and showed a lack of knowledge and understanding of VoIP operation.

## Question 2

**(a)**     This question was answered quite well by many candidates who correctly identified the purpose of the local and domain parts of the email address structure. Poor answers merely stated that part A was a username and part B was the company name. Very few candidates correctly described the purpose of the .com part of the address.

**(b)**     Some candidates could answer this quite well. Good answers included the details of how the appropriate protocols move emails around networks. Poorer answers concentrated on the writing and addressing of the emails and did not describe how the email gets from the outbox of the sender to inbox of the recipient.

## Question 3

**(a)**     This question required candidates to explain the benefits that passengers would experience when using e-tickets. Good answers referred to the process of using the e-ticket and included displaying the e-ticket on a smartphone rather than carrying a paper copy, the use of a barcode/matrix/QR code that can be used to retrieve passenger details from the system and/or the need for only the reference code at check-in. Poor answers gave generic benefits of using the internet to purchase tickets e.g. 'no need to travel to the airport' which did not score the marks. The question was not about the purchase of tickets online but a significant number of candidates produced answers that dwelt upon the purchasing processes. Candidates must read the actual question as set.

**(b)**     This question was not well answered. Good answers referred to the use of e.g. the reference code to access the stored passenger details and match the e-ticket to the passenger, and then the use of these by check-in staff to e.g. identify the passenger.

**(c)**     This question was well-answered. Most candidates could correctly state a suitable method of sending the boarding pass to a mobile device.

**(d)(i)**     Many candidates gave generic answers to this question and did not score the marks. Good answers included references to the security issue and the removal of the necessity to print the boarding cards prior to boarding.

**(ii)**     Poorer answers included stating that the mobile device/phone 'might break' or be stolen. While there is a possibility of these events, they are generic responses and do not properly answer the question. Good answers included the fact that mobile apps may not cope with more than one per person per flight booking or the e-boarding pass may not be readable from the screen of the device. Candidates must read the scenarios carefully and they must apply their knowledge when answering the questions.

## Question 4

This question was about the concerns that passengers might have when purchasing e-tickets online. Many good answers were seen but too many candidates gave generic answers about hacking and identity theft. Good answers explained that there may be a greater possibility of fraud because personal details can be intercepted during the transfer of data between a passenger and the booking site with the possibility of these personal details being used for identity theft, or that financial details can be intercepted during the transfer between passenger and booking site and be used by third parties to purchase goods. Also, that it is more difficult to correct errors when purchasing e-tickets online.

## Question 5

This question was answered quite well with many candidates including electronic passports being more secure so passport copying or tampering is more difficult because the chip holds hash (#) code of all files,

there is often faster clearance at immigration checks because the chip can be checked more quickly by a computer than by humans. Drawbacks included data transfer by RFID is insecure because RFID signals can be read by any appropriate reader in the vicinity and/or the use of biometric data is seen as invasion of privacy. Poor answers were, once again, generic or not answering the actual question with references to the benefits and drawbacks of using the internet or e.g. purchasing electronic passports.

**Question 6**

**(a)** This question was about the use of the items of hardware *by a checkout operator*. Poor answers merely referred to the generic advantages and disadvantages of each item. Again, candidates must read the scenarios carefully and must apply their knowledge to the specific questions.

**(i)** Many answers mentioned that the speed of data input is increased but many did not relate this to the use at a checkout. Better answers referred to the reduction in data entry errors, the increased speed of looking up the item details compared to manual methods and the subsequent reduction in customer queuing times; the most common disadvantage quoted was that damage to a barcode would require the manual entry of the code or the manual lookup of the item details.

**(ii)** Electronic scales are not necessarily more accurate than other types of scales as stated by many candidates – this did not score a mark – but they are linked to the EPOS system so prices can be automatically calculated and added to the bill more quickly than manual methods. Poor answers included references to the 'breakdown of the electronic scales' stopping the sales process. Good answers made mention of the misidentification of items put on the scales leading to incorrect pricings.

**(iii)** Again the poorer answers were generic and included 'faster data entry' or the lack of the ability to enter characters other than numbers without any reference as to how these affected the use by check-out operators. Good answers included the use for entering the quantity of items, being necessary for entering barcode numbers if barcodes were missing or unreadable; and possible miss-keying of data as keys are often close together and the fact that most keypads are placed or arranged to favour right-handed individuals.

**(iv)** This question was answered reasonably well with some good answers stating that e.g. touchscreens show pictures of items for choosing goods with no bar code but they can get dirty so become unresponsive. Once again poor answers were generic or mentioned that 'if they break they would not work' – such answers do not score marks.

**(b)** This question required candidates to describe how automatic re-ordering of goods works. Good answers included details of the barcode reading and the use of the code to look up the item details in a stock database. Details of the appropriate fields in the stock database were included in the best answers. Poor answers omitted the specific details of the process.

**Question 7**

This question was about the advantages and disadvantages of the use of a 'just in time' ordering strategy so details of how the process worked were not required. Candidates who included the details of the workings of the process failed to score marks. Good answers discussed e.g. the reduction in storage requirement and the resulting cost savings and e.g. the inability to quickly respond to changes in demand for goods.

**Question 8**

This question was answered quite well with some good answers that included the supermarket getting software that exactly fits its needs and the software has the features specifically for the supermarket with no unwanted features, but it can take a long time to develop and usually costs more than off the shelf software because development costs are not shared amongst many users. Poor answers were generic and often referred to the software being 'easy to use', 'needing no training to use', or e.g. 'cheaper'. Again, candidates must read the scenarios carefully and must apply their knowledge.

# APPLIED INFORMATION & COMMUNICATION TECHNOLOGY

Paper 9713/04

Practical Test B

## General comments

This paper consisted of two distinct but related sets of tasks. In general candidates were well prepared with the skills necessary for most of the tasks but there seemed to be a number that were unfamiliar with the concept of "Modelling" in a business scenario. In the first set of tasks, candidates had to investigate the relationship between advertising expenditure, selling price and the number of sales and profit made on the sales. They were supplied with a spreadsheet containing a formula that simulated this relationship. The results of their investigations needed to be presented in mail merge documents and a presentation.

Most candidates managed to progress through the steps specified in the tasks, but it was clear that only a few understood the implications of their results.

Modelling is an important aspect of the application of ICT and centres would benefit from prioritising the understanding the potential of this use of data handling skills.

## Comments on specific questions

### Tasks 1(a) & 1(b)

Candidates were required to format the cells and complete a model by inserting formulae for the income and profit.

Most candidates were able to determine the named ranges and complete the model. Very few neglected to format all the cells specified as currency but a number did fail to format the sales figure as an integer.

### Tasks 1(c), 1(d) & 1(e)

In these tasks candidates were required to insert values for advertising and manufacturing costs in the model and determine "break-even" values. Obviously the most efficient solution was to use a spreadsheet Goal Seek analysis tool. Surprisingly a number of candidates seemed unaware of this feature and resorted to trial and error techniques. While this is a legitimate method most candidates did not provide the necessary evidence to support the use of this strategy. Centres would benefit from emphasising the importance of using Goal Seek and providing evidence of a systematic approach to using Trial and Error techniques.

### Task 2

This task consisted of a relatively straight forward mail merge. The selection of the recipients was most efficiently automated using the SKIPIF rule but since it was not necessary to ensure the repeatability of this task, evidence of the use of filters was acceptable. Merely manually editing the recipients list was not accepted as a valid solution.

The mail merged memo also required candidates to insert links to the data from **task 1**. This included a conditional link. Surprisingly a number of candidates seemed unfamiliar with the concept of linked data, or misunderstood the task. Many inserted hyperlinks to the data. Clearly this was not suitable for a document that was intended to be printed. Additionally, centres would profit from giving candidates practice with including links in a conditional field.

**Task 3(a)**

In this task, candidates were required to limit the amounts that could be inserted for advertising by using the data validation features of the spreadsheet application and extend the data model in order to explore the effect of increasing the selling price on the sales, income and profit.

In general, the data validation was carried out well by almost all candidates and most provided clear evidence. The only area that centres might be wise to address in this area is the clarity of the titles and text of the input and error messages.

The extension of the model required clear understanding of the importance of absolute and relative cell references. This was of particular importance when after unprotecting the sheet for the Sales figures, candidates had to carefully amend the exposed sales formula to make it suitable for replication.

The formula for the sales was complicated and referred to cells that need both absolute and relative references. Most candidates were successful demonstrating this important aspect in the use of spreadsheet applications and centres are to be congratulated in covering this topic well.

**Task 3(b)**

The data from **task 3(a)** was needed for candidates to create a graph showing the profit as the selling price increased. They then had to overlay the sales data with a secondary vertical axis.

Many candidates provided the correct solution but a number failed to convey sufficient context to the graph by adding suitable text to the title, axes and legend.

**Task 4**

The task required candidates to present their findings in a presentation. A clear understanding of the relationships between costs, selling price, sales and profit was an advantage for candidates when determining the values required to be highlighted. On the slide showing the table of values from **task 3(a)**, very few candidates inserted callout boxes indicating the values showing the maximum profit values and the corresponding selling price. Even fewer overlaid the graph with the vertical line through the maximum profit on the slide showing the graph created in **task 3(b)**.

**Tasks 5(a) & 5(b)**

The data required for **task 5** was available in a text file that candidates had to prepare for the import to a database application. Almost all candidates provided clear evidence of the structure of the tables but a number failed to show sufficient evidence of any steps necessary for the import. Up to date versions of database applications do seem to be able to import the data directly but candidates still needed to show the result of their inspection of the data and the implications of the format of the text file.

The generation of the required report was well done. Almost all candidates provided clear evidence of the query and solutions with the necessary groupings and formatting. Centres have clearly addressed this aspect of the use of database applications very well.

**Task 5(c)**

This task required a mail merge of data from the database to be included in a memo to selected recipients with specific conditional text. Since this task was clearly not designed to be repeatable or dependent upon changes in the database the data did not have to be linked. It should, however, have been formatted to a professional standard.

In general candidates carried out his task well. Centres have clearly addressed previous issues regarding proofing of the final documents but once again a factor that disadvantaged some candidates was their lack of familiarity with the display option settings in their word processing applications. Many resorted to screenshots to provide evidence of the mergefields. Whilst this is acceptable for the most part, many lost marks because evidence that the date was inserted as a field was not shown.

**In conclusion**

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

- understand that these papers are based on business scenarios and that some attention to aspects other than ICT skills may be required
- understand the potential of Goal Seek analysis
- provide evidence of a systematic approach to using Trial and Error techniques
- are familiar with including links in a conditional field
- understand the importance of providing context for users – particularly with respect to titles and text in graphs, charts, and input/error dialogs
- consider the evidence required to ensure follow through marks could be awarded in the event of errors
- are familiar with the display option settings in their word processing applications.