

# STANDARDS BOOKLET FOR GCE AS APPLIED ICT 9713 (Paper 1)

For paper set May/June 2008

## INTRODUCTION

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The GCE AS examination papers are based on the assessment objectives as described on page 2 of the syllabus. Broadly speaking the assessment areas are

- Practical Skills
- Knowledge and understanding.

The structure and timing of each examination paper is given on page 3 of the syllabus.

This standards booklet has been based on responses that candidates have given to the 9713 May/June 2008 Paper 1. It is designed to provide support to teachers of the subject in the following ways:

- Giving examples of candidates' work at different achievement levels
- Relating answers to the mark scheme
- Providing a commentary on the candidates' work.

The answers provided are designed to give some guidance as to the different range of responses that candidates typically provide and how these responses are assessed. There is no attempt made to provide specimen perfect answers.

## QUESTIONS AND RESPONSES

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### Paper 9713/01 Short answer/structured questions

#### Scenario 1 Questions 1 and 2

Alexandria Regional Bank is a small bank with three branches. However, it wants to introduce an online banking system using the internet. In order to ensure that the system will work effectively it has employed the services of a systems analyst. The analyst will investigate the current methods of carrying out transactions.

At the moment, all paying in slips and cheques are gathered together in the course of the day and are then batch processed overnight. Many customers pay their bills by writing a cheque together with the invoice which is similar to a paying in slip. Sometimes customers call in or phone the branch to find out the balance on their account. Statements are only sent to customers at the end of each month.

#### Question 1 (a)

Describe **three** methods a systems analyst would use to research the way the bank currently operates.

#### General Comments

Candidates are expected to give a description of the methods. This can consist of naming the method **and** describing what it consists of, or naming the method and the people who will be involved. Just naming the method would not be considered sufficient to answer a 'describe' question.

#### Individual Candidate Responses

##### Candidate A

Observation – the systems analyst sits with an employee and observes how the current system is run.

Interviews – the systems analyst has the opportunity to sit and ask questions with different employees.

Questionnaires – the systems analyst makes up a list of questions and distributes them among the employees.

**Marks awarded = 3 out of 3**

**All three answers say who is involved, who is being targeted.**

##### Candidate B

Through Questionnaires by distribution of handouts.

Through Interviews with the managerial board or top staff

Through person to person conversations

**Marks awarded = 1 out of 3**

**The first and third answers don't say who is being targeted or what questions will be asked**

### Question 1 (b)

Describe how data would be stored in the current system of batch processing.

### General Comments

The question asked for a description of the way that data will be stored and requires the candidate to fully understand what is involved in batch processing, including how data will be accessed and processed. There were marks available for describing how data would be stored (sequentially) and why (to enable serial access), as well as for how the processing would be carried out and how it would be used in this scenario.

### Individual Candidate Responses

#### Candidate A

Sequential data access would be used as data would be retrieved sequentially. This means that data can be retrieved in a pre-determined ordered sequence since all the records have to be read anyway.

**Marks awarded = 2 out of 2**

**The first sentence is on the mark scheme. The second sentence describes serial access.**

#### Candidate B

Data is collected in batches and stored in a file. The file is an indexed sequential file whereby the data has a primary key that is unique so that the data could be accessed quickly and easily.

**Marks awarded = 0 out of 2**

**This candidate doesn't appear to understand that in a batch processing system there is little requirement to access records quickly until online banking is introduced as in part (c) of the question.**

### Question 1 (c)

Describe how data will be stored once the online banking system is introduced.

### General Comments

Candidates need to appreciate that online banking will require fast access to individual records as well as processing each customer's statements at the end of the month. The system will need to allow serial access and direct access. The candidates' answers must reflect this.

### Individual Candidate Responses

#### Candidate A

In on-line banking, index sequential storage is to be used. The data is still held sequentially to allow batch processing. However, each has an index to allow direct access and thus real time processing.

**Marks awarded = 2 out of 2**

**The first and third sentences gained a mark each but the erroneous reference to real time processing was ignored.**

#### Candidate B

Data will be stored in index sequential file access in which data would be compared to an index table and if any record is needed randomly then it can be accessed directly without having to go through a file.

**Marks awarded = 2 out of 2**

**Although this candidate's English is not as strong as other candidates, the meaning is still clear.**

### Question 1 (d)

Describe the equipment a bank customer will need if they are going to use the new online banking system.

### General Comments

Candidates need to realise that the word description in this question requires them to name a piece of computer equipment **and** say what it will be used for. Just naming a device will not gain any marks.

### Individual Candidate Responses

#### Candidate A

A keyboard is necessary so that customer can write his/her username and password to access his/her data on the bank. Another equipment necessary is MODEM so that the person can connect to the internet so use on-line banking service.

**Marks awarded = 2 out of 2**  
**Both sentences clearly state a use.**

#### Candidate B

The bank customer will need a computer and the usual hardware like keyboards etc. The customer would also need a modem to connect to the internet to use the on-line system.

**Marks awarded = 1 out of 2**  
**This candidate did not gain any marks for the first sentence as no description was given as to how the hardware would be used.**

### Question 1 (e)

Some customers are worried that they will have to type in their bank account details. Discuss why you think this will be a problem or not.

### General Comments

In order to answer this question candidates needed a thorough grasp of online banking and potential security problems. As it is a discuss question the positive and negative aspects have to be discussed. Reasons why it would be a problem and why it would not be have to be given. A reasoned conclusion i.e. summing up both sides of the argument and justifying one side would gain a mark.

### Individual Candidate Responses

#### Candidate A

Customers presently worry about the system security and fraud. They think that their account details would be intercepted during transmission. However, present system security is much better than general opinion and are almost immune to hackers. The banking details are encrypted

**Marks awarded = 3 out of 4**

**Each of sentences 2, 3 and 4 are worth a mark.**

#### Candidate B

This could potentially be a problem because when they type in their bank details it will be sent over to the bank. The bank could misuse this information, but there are laws against this. However, a hacker may intercept the transaction and obtain the customer's details, which leaves them (hackers) in control of the customer's bank account.

**Marks awarded = 1 out of 4**

**The only valid point made here is the reference to transactions being intercepted.**

### Question 2 (a)

Describe the effects that the introduction of the new system will have on the people who work at the bank in terms of employment and working patterns.

### General Comments

Candidates must identify the people who would be affected in terms of unemployment. Not all workers would be at risk. It is not sufficient to just say that some workers would be unemployed. Candidates must go on and identify the new jobs which would be available. Other effects such as job sharing and part time working must be identified.

### Individual Candidate Responses

#### Candidate A

Many bank clerks/cashiers will get unemployed as there would be lesser customers to serve. Many will get employed as part time workers as they won't have much to do. Computer technicians and those who can operate computers shall be employed as the whole system is now completely based upon computer working. Job sharing shall also be carried out by the bank employees. Further more home working can also be done by some computer personnel.

**Marks awarded = 4 out of 4**

**The candidate has made four valid points in the first four sentences.**

#### Candidate B

Some cashiers would be unemployed because now there will be lesser work-load in bank building. Building maintenance staff would also be reduced due to lesser activity in the area. Some present employees would need to be trained to work with the website while others will be trained to deal with technical hardware problems

**Marks awarded = 1 out of 4**

**There is only one mark available for unemployment here. Without the candidate going into detail it is difficult to justify that 'some present employees would be trained...'. A cashier, for example, would not be trained as a web designer.**

## Question 2 (b)

Explain what responsibilities the bank has with regard to its customers and the data they will store about them. Discuss the types of security measure it will need to introduce.

## General Comments

There are two aspects to this question which many candidates failed to pick up. The first is to go into detail about the bank's responsibilities. The second is to give advantages/disadvantages of security measures (note that this is a 'discuss' question). It is not enough to just list the responsibilities or to just list the security measures. Even though this question could be seen to relate to the data protection act, candidates would not be able to gain marks merely by listing the principles. As the question asks for an explanation candidates must put these principles into context.

## Individual Candidate Responses

### Candidate A

Bank needs to ensure that data about the customer is not stolen because it is confidential (financial details, address) etc. Bank is bound to remove data about customer when customer leaves the bank. They should keep data up to date and accurate as it is important that only true balance amount is stored both for bank and for customer. It will need to protect access to user details with password to bank database so that unauthorised people cannot view it.

**Marks awarded = 4 out of 6**

**This candidate has explained the bank's responsibility to safeguard the data because it is confidential for one mark. Two principles of the data protection act are put in the context of the bank. The final mark is for giving the advantage of passwords i.e. unauthorised people cannot view the data without one.**

### Candidate B

- They have to follow the data protection rules.
- Customer's data must be fairly and lawfully processed.
- It should be up to date and accurate
- Should not be kept longer than necessary
- They can't pass the data onto other companies without the customer's consent.
- They should use the data encryption protocols like SSL or SHTTP.
- Physical measures: Server should be in a locked room.
- Biometric measures: fingerprint scanning
- Introduce passwords & level of access

**Marks awarded = 1 out of 6**

**This candidate has given the responsibility of the bank to follow the data protection rules. Unfortunately there are no more marks awarded as the candidate has just listed data protection principles without explaining them in the context of the bank.**

### Scenario 2 Questions 3 and 4

Maharashtra fashions is a very large mail order catalogue company which sells a variety of clothes. When the company was first formed by Vikram Jain he used to buy small quantities of clothes and then sell them by mail order. He advertised in local newspapers to attract customers. Before long he employed staff to keep records of all their stock in folders.

Vikram has decided to computerise the company operations. He has employed a systems analyst who has completed the Analysis stage. One of the recommendations of the systems analyst was that the payroll system at the company should also be computerised.

He is also going to open a call centre so that customers can phone in their orders. Vikram will need to buy hardware and software to set up his call centre. This will be needed to link all the operators to the main computer system.

Vikram has decided to employ a new worker, Ashray, to create a web page to advertise these new developments.

Vikram will also have his own computer and he will run business software on it.

### Question 3 (a)

Describe the different items that the systems analyst will need to include at the Design stage and explain the factors that will influence the choice of item.

### General Comments

Candidates are expected, at this level, to apply their knowledge to a given scenario. There were five relatively easy marks to gain here just by describing the items included at the design stage. Unfortunately, it appeared that many candidates had learned off by heart the factors listed in the syllabus. The second part of this question was an 'explain' question. This requires the candidate to give examples to back up their descriptions. For example, it is not sufficient just to say that the choice of output device depends on the volume of data output. Candidates would need to say that, for example, if the volume of data was great then a laser printer would be more appropriate than an inkjet printer.

### Individual Candidate Responses

#### Candidate A

Firstly, the storage devices and output devices should be considered. They depend on the volume of the data and the order of the data. Then the data form and screen layouts will be included and depend on the requirements of the system. Next the screen display will depend on the requirements of the users. The validation routines will be involved and depends on the input and output structures. Then the file form or data structure will depend on the processing, input and output structures.

**Marks awarded = 5 out of 8**

**This candidate gained the five marks for descriptions of items but could not put the remainder of their answer into context. Each statement should have had 'for example...' after it with an example described.**

#### Candidate B

- The layout of the input and data collection forms
- Depends on the type of data, volume, quality
- The storage of data and the choice of storage devices
- Depends on the volume of data and the method of access required
- The processing methods
- Depends on user requirements, type of data and data access
- Validation routines
- Depends on the type of data, volume of data, user requirements.
- Design layout of output forms and reports
- Depends on users requirements, quality of data, type.

**Marks awarded = 3 out of 8**

**Marks could only be awarded for bullet points 1, 7 and 9. The remainder were not in sufficient detail.**

### Question 3 (b)

Computerising the payroll will require the creation of a master file and a transaction file. Describe the information that will need to be stored about each worker on each file.

### General Comments

Candidates would need to demonstrate that they fully understand payroll. They would need to understand the data that would be stored on the master file and that which would be stored on the transaction file. A minimum of three items had to be provided to gain one mark for the master file and worker number or similar had to be given with at least one other item for the transaction file.

### Individual Candidate Responses

#### Candidate A

In the master file, the employee ID, Employee's name, contact number, address, wage rate, NI, tax, holidays would be stored. In the transaction file, the hours worked for each worker in the sorting order of Employee ID would be stored.

**Marks awarded = 3 out of 3**

**The candidate has given several items for the master file though name, contact number and address would only count as one item. There are still enough to merit two marks. The candidate also gets a mark for listing Employee ID and hours worked on the transaction file.**

#### Candidate B

Transaction file would be used to store the hours worked by a customer and the master file contains his hourly rate. After calculating the pay the amount paid will be stored in the master file.

**Marks awarded = 0 out of 3**

**The candidate only named one item for the transaction file and possibly two for the master file but this was not sufficient to get even one mark for either file.**

### Question 3 (c)

Describe the outputs of the payroll system.

### General Comments

This again requires the candidate to fully understand the payroll system. It would not be sufficient to concentrate on the payslip produced as this is just one of the many outputs produced by a payroll system. There are several reports which the candidate could refer to in their answer.

### Individual Candidate Responses

#### Candidate A

The payroll system will give printouts of each individual employee pay slip, containing their salaries and taxes. It will also print out financial reports showing the turnout of the workers and how much time each worker worked.

**Marks awarded = 2 out of 4**

**As with many candidates this answer concentrated on describing the payslip. A second mark was gained, however, by describing a type of report.**

#### Candidate B

- Outputs will be printed on each workers payslip
- Will include the worker ID
- Their wage calculated from hours worked and the rate
- The tax deducted
- Employee details such as name and address

**Marks awarded = 1 out of 4**

**This candidate went into detail about what would appear on the payslip but concentrating on one item, no matter in how much detail, will only gain one mark.**

### Question 3 (d)

The new system will need to be implemented. Compare and contrast the different methods of implementation that the company could use.

### General Comments

In order to answer the question the candidate must describe at least three methods. It is essential that having described the methods in sufficient detail the candidate goes on to describe the advantages/disadvantages or differences of the methods. For this at least two of the methods must be compared. It would not be sufficient to just say that direct changeover is a fast method of implementation. The candidate would need to go on to say that phased implementation would take longer as it is not done in one go.

Listing methods will gain no marks. Just describing them will only gain three marks maximum.

### Individual Candidate Responses

#### Candidate A

- Parallel running: The old system is run alongside the new system. If the new system fails still have the old one. Drawback: have to employ a lot of employees staff.
- Direct changeover: The old system is immediately replaced by the new system in one go. Have to employ less employees than 'parallel running'. But if the new system fails the result could be a havoc as no old system remaining.
- Phased implementation: The new system is installed in phases in the organisation. If one department functions correctly with the new system then it is introduced in the other departments. Have to employ less staff compared with parallel running.

**Marks awarded = 5 out of 6**

**This candidate gained three marks for the three descriptions. An extra mark was given for stating that if the new system fails you don't have the old system in direct changeover but you do with parallel running. Another mark was for the comparison of the number of workers of the three systems.**

#### Candidate B

The company choose different method in implementation. One of these would be parallel running in which the current system and the new computerised system are run simultaneously till the time it is assured there is no mistake in the current system. They can use direct changeover in which the current system is changed directly into the new one. They can also use phased implementation in which a part of new system is formed, tested and then moved to next part. Another method is pilot running in which a department is first changed into computerised system and then we move onto next department.

**Marks awarded = 3 out of 6**

**A maximum mark of three descriptions of methods is achieved here but there are no comparisons made.**

### Question 3 (e)

After the system has been implemented it will need to be evaluated. Describe how the new system will be evaluated and how the results of this evaluation will be used.

### General Comments

This should be a straightforward question as the candidate only has to say how the system is evaluated. It is the means by which the systems analyst would evaluate the system not just what evaluation is. The final mark would be awarded for saying what use the systems analyst would put the results to.

### Individual Candidate Responses

#### Candidate A

Evaluating the new system in terms of its efficiency, ease of use and appropriateness of solution. Using test results to evaluate the solution. Using the results of that to identify limitations. Using identification of limitations to make improvements. Obtaining feedback from the user.

**Marks awarded = 4 out of 4**

**The first sentence is merely an explanation of what evaluation is not how a system would be evaluated. The following four sentences, however, are worth a mark each.**

#### Candidate B

In the evaluation stage, systems analyst/designer, monitors the progress of the new system and users may be asked their complaints or satisfactions of the new system. If any complaint occurs that part of the system can be re-analysed and re-designed to suit the requirements of the user.

**Marks awarded = 1 out of 4**

**This answer start out by saying what the systems analyst does but not how it is done. The line beginning 'and users', however, is worth a mark. The rest of the answer is not well explained and so merits no further marks.**

#### Question 4 (a)

Describe the features of the hardware and software Vikram will need to buy to set up the call centre.

#### General Comments

Again, this is a question which requires the candidate to fully understand the topic and then apply this knowledge to the question. The candidate needs to describe the features of the hardware and software and not just describe the hardware and software. The only exception made on the mark scheme was Computer Telephony Integration software as it is felt that this is self explanatory.

#### Individual Candidate Responses

##### Candidate A

The hardware will be computers, a headphone for each operator to listen to the call and reply, a keyboard for searching and typing information, a modem to connect all the operators to the main computer system. A telecom switch will be used, along with software such as CTI (computer telephony integration) to allow for features such as computer controlled dialling, caller information display, phone control (hangup etc.)

**Marks awarded = 3 out of 6**

**This candidate gained a mark for giving computers and headset to make and receive calls. A second mark was gained for CTI software and a third for software enabling caller information display etc. The mark for telecom switch could not be given as the candidate failed to say what it would be used for.**

##### Candidate B

- Wires and various sockets and switches.
- Desks with computers and telecom switch
- A headset to listen to customer complaints problems
- Software would be Computer Telephony integration software so that calls can be attended and responded to
- Microphone to explain the problem to the customer
- Internet, ISP, modem etc. to send emails briefing information etc.

**Marks awarded = 1 out of 6**

**This candidate failed to link computer, microphone and headset as required by the mark scheme. The other hardware was listed but not described. One mark was awarded for Computer Telephony integration software.**

#### Question 4 (b)

Vikram has already bought a PC for Ashray to create the web page. Explain, giving the uses of each item, the additional items of hardware and software he will need to buy.

#### General Comments

Candidates must give answers which give the use of each item. The answers must be in the context of the scenario. Just listing items will not be sufficient. Devices such as mouse and keyboard will not gain credit as the question already says that Ashray already has a PC. It is the additional items of hardware that need to be concentrated on as well as software and its uses. The use must be related to the website not just how the device would be used normally.

#### Individual Candidate Responses

##### Candidate A

- A modem to connect to the internet
- Web browsing software to access other websites and links
- Microphone for recording audio for the site
- Speakers to hear the audio output from the site
- DTP or presentation software to make advertising presentations
- Scanner to scan pictures or letters to put on the website
- Picture editing software to edit the pictures going on the website

**Marks awarded = 4 out of 5**

**This candidate gained marks for bullet points 3, 4, 6 and 7 as the others did not refer specifically to a use involving the creation of the website.**

##### Candidate B

Software: web authoring software  
web page editor  
web browsing software

Hardware: modem to connect to the internet  
Telephone to pass signals through this communication line. Or ISDN

Keyboard for typing in information.

Mouse for selecting a range of options

**Marks awarded = 0 out of 5**

**This is just a list of software and hardware without mentioning their use. The last two devices do not mention their specific use and already come as part of a PC.**

#### Question 4 (c)

The majority of employees will now be sat working at computers all day. Describe some of the health and safety issues which arise because of this.

#### General Comments

Both health and safety issues had to be discussed and also health issues brought about by prolonged use. Remedies weren't asked for in the question. Where candidates failed to mention prolonged or continuous use they were unable to gain marks for the health issues. They also need to refer to specific activities which cause health problems.

#### Individual Candidate Responses

##### Candidate A

RSI may cause because of the repeated movement such as typing for long time. Back pain may arise as prolonged sitting in a same position. Eye strain will happen as the bad lighting in the office and watching the screen for a long period. Electrocutation may arise due to drink near to sockets. Also the overloaded sockets may cause fire.

**Marks awarded = 5 out of 5**

**Each sentence was worth one mark. The first three all mentioned prolonged use and named an activity which caused the health problem.**

##### Candidate B

Backache and posture problems could arise from the lack of movement all day. Vision problems could result from staring at a computer screen. This could be reduced by using antiglare screens. Repetitive strain injury could result from poor posture, this could be reduced by use of wrist pads, Headaches from continuous staring at the screen.

**Marks awarded = 2 out of 5**

**The first and last sentences were awarded marks as they mentioned the activity and prolonged use. The second sentence did not mention prolonged use but in combination with the last sentence was given the benefit of the doubt. There was also a prevention but this was not asked for by the question. There were no safety issues mentioned by the candidate.**

#### Question 4 (d)

Vikram will use his computer to help him with his time management. Explain how the computer will help.

#### General Comments

Again, this is an explain question so the description of the features of the computer which will help Vikram must be put in the context of this scenario and the possible uses must be given. Just mentioning hardware and software would be insufficient for this question. Candidates would have to have an in depth knowledge of the subject matter in order to gain many marks.

#### Individual Candidate Responses

##### Candidate A

Time management software exists which can organise meeting times and alert the user of the meeting times. Gantt chart can be used to allocate time to different projects. Different parts of the project can receive the correct amount of time by the software. The employees can be given equal amount of workload by using the allocation software and hence equal workload can be distributed. Furthermore meeting times can be arranged and fitted in with the busy time schedule and reminders too can be sent.

**Marks awarded = 4 out of 6**

**This answer gains a mark for each of the first four sentences. The final sentence which is a new paragraph is more or less a repeat of the first sentence.**

##### Candidate B

The computer offers time management software which could be used to arrange meetings and fix any schedules. He could set up any reminders on this software which will remind him of his to-dos. Time tracking software could be used to help deal with schedules and deadlines within them. Also for various business projects, he could use a project management software to help with their completion.

**Marks awarded = 2 out of 6**

**Only the first two sentences gain marks. The third sentence talks of dealing with schedules which is already dealt with in the first sentence. The last sentence is too vague to gain a mark. An explanation of how they could help is needed.**

### Scenario 3 Question 5

John is a travelling salesman. When he first started his job, he used to take with him a road atlas to find his way to the companies he was visiting. He kept a book diary for his appointments together with a section for writing down phone numbers. If he was delayed in traffic he was unable to contact the company he was visiting to inform them he was going to be late. This meant he often missed appointments.

After visiting companies he would go back to his hotel and write a report in a book he kept for that purpose. He was often frustrated by not being able to find out much information about the company before his visit. As a result he was often unprepared for his visit.

He likes music and had a portable cassette player with headphones which he would listen to when not at work.

### Question 5 (a)

Describe modern Information and Communication Technology devices John would use today.

### General Comments

This is a fairly straightforward question. There are factors that some candidates failed to take into account. The question asks about devices which means candidates must concentrate on hardware and not software. In addition as the question refers to devices, it is not sufficient to concentrate on only one, such as a PDA. The other factor was the requirement for the candidate to identify uses as well as the hardware.

### Individual Candidate Responses

#### Candidate A

John would use a palm top or a digital diary to keep his customers phone no's and his appointments in. He would have a mobile phone to tell the customers that he's going to be late or whether they would need to reschedule.

John would have a laptop to type is report in and he could use internet access to research about the company he is visiting before going to them. He would have a CD or mp3 player to listen to songs when he is not working

**Marks awarded = 5 out of 5**

**The candidate gained two marks for the first sentence, one for the second sentence, one for the third sentence and a fifth for the fourth sentence.**

#### Candidate B

John would carry a laptop computer or a PDA with him. He will also be having a mobile phone. He can use a MP3 player. The laptop would have a modem in it. The laptop can have a CD and DVD drive in it.

**Marks awarded = 0 out of 5**

**This is an example of identifying devices but failing to describe them by adding the use of each one.**

### Question 5 (b)

Explain the advantages of these devices to John.

### General Comments

Candidates are required to explain the advantages so must say what is good about the device and also compare it with the existing device.

### Individual Candidate Responses

#### Candidate A

GPS would be more up to date than an atlas.  
A PDA can overwrite previous info so no dirty scribbles.  
Cell phone will make him so that he doesn't miss appointments.  
Internet has a lot of info about a company  
MP3 player can store large amounts of data

**Marks awarded = 3 out of 4**

**This candidate gained a mark each for statements 1, 2 and 5. The first is clear cut but credit was given for 2 and 5 as, by inference, the advantage over the original method was explained.**

#### Candidate B

John could search the internet to search for company information to be prepared beforehand. He could also set appointments over the internet. A digital atlas would be more helpful to him. The appointment information and the data collected could be more organised. He could email the company if he is delayed. The report that he produces could be generated faster and be better using his laptop. His mp3 player could contain a vast collection of songs.

**Marks awarded = 1 out of 4**

**Apart from the final point, the candidate does not explain the advantage of the device.**