

# COMPUTING ADVANCED LEVEL

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Paper 5216

Computer Systems, Communications and Software

## General comments

The standard of the presentation was once again very good. There is a minority, who did make life difficult for the Examiners and the next few comments are particularly addressed at a few Centres rather than the majority. Although the order of presentation of responses will not directly affect the candidate's final mark, in the second half of the paper the questions are meant to flow and information in one question will be important in the following questions. This is because this part of the paper is based around a scenario and candidates who attempted these questions out of order may have penalised themselves. In addition, it is not sensible to attempt the parts of a question in a different order to the way that they are presented. The mere fact that they are presented as parts of the same question indicates that they are connected and again, candidates who attempted the different parts in the wrong order will not be helping themselves. Some candidates thought the question numbers were irrelevant and the responses were written as one long essay divided only by paragraphs. This made it difficult to follow. One candidate had combined both methods and had answered the questions (and parts of questions) in their own order and had decided that question numbers were unimportant. The Examiner managed to attribute all the responses to the right questions but the candidate risks not earning credit where it is due.

More common is the attitude prevalent among some candidates that the question has not quite been worded correctly, so the candidate decided to reword it the way that they thought it should be. This obviously leads to the wrong question being answered and the chance of earning marks minimised. Many candidates did this by seeing a word and then writing an answer based on that word rather than on the question. In **Question 1** there was an extreme example, where the question said 'peripheral devices' which lead many candidates to write about keyboard, mouse and monitor as their first three answers when the question went on to say 'apart from keyboard, mouse and monitor.' The candidate had seen the term 'peripheral devices' and simply written down what they knew about peripheral devices. In **Question 2c** the words 'batch processing' lead most candidates to describe batch processing, totally ignoring the rest of the question which went on to make it clear that this was not a question about batch processing but about speed mismatch.

The volume of responses submitted is becoming problematic. Over 20 sides of A4 is fairly common. This is a worrying trend because it demonstrates a lack of ability on behalf of the candidate to discriminate between what constitutes a sensible answer to the question and what does not. Examiners fully realise the stressful nature of the whole process and make allowances by finding the correct responses when the candidate has given more than one. Examiners have a rule that the candidate who simply writes down all they know about a topic must be penalised for lack of ability to formulate an answer. A good example is **Question 2c** where many candidates just wrote down everything they knew about batch processing. If they did this then they are bound to state at some point the fact that the data is collected before processing and that the processor can command a number of peripherals; but part of the answer to the question must be to understand that these were the important things about batch processing that relate to the question. This was intended to be a difficult 2 marks, aimed at the higher ability candidates. A question asking for a list of facts about batch processing would be a lower ability question where examiners were expecting the majority of candidates to score both marks.

## Comments on specific questions

### **Question 1**

A well answered question. There is a concern about the number of candidates who seemed unable to relate to any application other than playing games.

### Question 2

- (a) Many confused mismatch with time lag, indicating that it was the human who was the fastest part of the system because they had to wait for the processor to boot up. Most candidates scored here but it appeared to be because of an interpretation of the term rather than having met it before.
- (b) A safe mark as long as the candidate stuck to the standard answers. For too many candidates the answer was 'the ATM machine' which is not acceptable.
- (c) In many cases it seemed that marks were gained by accident rather than through attempting to answer the question as set. However the marks were awarded if earned.

### Question 3

- (a) Candidates did understand the need for a well defined problem before a solution could be attempted, but the role of the different people involved was less well stated.
- (b) Two methods did not cause a problem. However most candidates went on to give a description of the method rather than an advantage of using it. Those who did give advantages found the advantage of an interview difficult to define. This is probably more true of a questionnaire because it gives time to consider responses whereas an interview does not.
- (c) Most candidates gave the same answer for both. The Examiners were looking for a distinction between the requirements of the two people involved. The user is interested in it being useable whereas the analyst is interested in the contract being completed, signified and agreed, objectives being met, so that they can get paid. For the list of acceptable responses to this and all the other questions on the paper, Centres' attention is directed to the published mark scheme.
- (d) A difficult question which discriminated well at the top end of ability.

### Question 4

- (a) Too many candidates thought that a disk formatter would delete unwanted files from a disk. In other words it would be discriminating about the files to be deleted.
- (b) Most candidates were able to state 2 purposes, but the second marks for the descriptions were usually less well earned.

### Question 5

- (a) Well answered.
- (b) Many used the example of changing of a password, but too many were content to just state an application with no reason as to why the data would have to be verified. It should be noted that full verification is an expensive process and it is important to justify why it should be used.

### Question 6

This question was poorly attempted. Many did not attempt it and those that did failed to do a proper dry run, while few were able to give sensible test data. When the length of the paper was extended by 30 minutes the intention was that the time would be used to answer questions like this properly. The Examiners gained the impression that the candidates did not use their time wisely when attempting this type of question.

### Question 7

The candidates read this question as 'Write down everything you know about the Internet' and ignored the important 'social and ethical' part of the question. This should not have been a surprise to them as the concepts are taken straight from the syllabus. There were lots of answers about being able to shop on the internet, but this is not worth a mark because it does not answer the question. If candidates had gone on to say the effect of people buying on the internet resulted in cheaper items, meaning people would be able to afford more, resulting in higher standards of living, this would be a social point, as would have been the point that the local shop has been forced to shut down putting 3 local people out of work. The fact that lots of information can be found is not worth credit; the fact that some of that information is about other cultures which may be counter to the local culture and is used by the young to inform their opinions is an ethical point, undermining the local religious beliefs would be another.

There was confusion among some candidates over the distinction between ethical and ethnic leading some candidates to stray from the point.

### Question 8

- (a) Some candidates muddled up the relationships. Some candidates did not know the relationship between field, record and file. This particular question expected candidates to relate the answers to the application of the car file. This made the question demonstrably harder. Many candidates decided to write their own question and use the customer file rather than the car file, which meant they could not score in part (a).
- (b) Definitely a top end question, but very well answered by some candidates. The biggest error was in thinking that the record was limited to be a specific size rather than the fields which went to make up the record.
- (c) Well answered, though too many were content to say number rather than being more specific and using integer or currency.

### Question 9

The idea of an integrated software package was well understood, though the reasons why the garage would want to use one was not so well understood. Again candidates had a problem with applying their knowledge to real situations. One was given to them in part (b) and proved highly problematic both to describe and explain. Yet Examiners must have ensured that all candidates used a mail merge. This question was originally aimed at the lower end of the ability range, the expectation being that the majority of candidates would score well. However, this was not the case and, apart from the imposition of a particular application, Examiners were at a loss to suggest why it should have proved so problematic.

### Question 10

- (a) Well answered.
- (b) Despite being clearly stated on the syllabus that candidates should understand the relationship between the bit rate and the data transmitted, and that the concepts of the larger the volume of data/time sensitivity, the larger the bit rate being straight forward ones, this was undoubtedly the worst answered question on the paper with no more than a handful of candidates scoring more than the mark for the definition of baud. The second part about the interface was well answered.
- (c) Well answered.

### Question 11

This was meant to be a difficult question although there were some very good answers. The part Examiners found missing from all answers was the idea of the compression of the data. Examiners found this to be strange as normally compression is a favourite response of candidates often in inappropriate places.

**Question 12**

- (a) This was not intended to be as difficult as it proved to be. The question required a definition of each and yet the terms seemed not to be understood.
- (b) The hashing algorithm (the question was asking for a method of accessing records in this particular file, not, for instance for the details of an algorithm to access records forced into the bucket by collisions) was well done by the majority of candidates who came up with a way of allocating locations to records. Most used 6 digits although some restricted themselves to the last three digits. Most were able to describe a way to handle collisions.

# COMPUTING ADVANCED LEVEL

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<p><b>Paper 5215</b> <b>Structured Practical Tasks</b></p>
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## General comments

It was good to find that so many of the projects submitted for this paper were of such high quality. All were well presented, but many showed the candidates' good design skills, good programming skills and thorough testing. The wide variety of topics was also very interesting, most giving the candidates good scope to show their abilities.

The majority were accurately marked. Where there were detailed individual mark schemes plus notes from the teacher, it was very clear how and why marks had been awarded. This was much appreciated by the Moderators.

Although this is the third time that this paper has been in the present form, there are still many Centres whose candidates' work does not match the requirements of the syllabus. It is not necessary to do interviews with an end user, to find alternative ways of changing a system, nor to evaluate a system. The Programming Project is not about designing a new system, and none of the features mentioned can gain any credit here.

It was good to find that only a very few Centres are suggesting that candidates write programs to solve an essentially mathematical problem. These rarely give a candidate scope to show their ability in programming files and records.

With the best projects it was possible to look at the design and see it reflected in the code. The code was well laid out and, because of the detailed annotation, often on every line, it was clear what the code did and how it related to the design. It is not good practice to write some 10 pages of detailed and clever code if it is impossible to see what the code does without hours of expert knowledge to analyse it.

A major weakness was testing. There were three poor styles. The first listed a set of theoretical ways of testing a program; this is worth no marks. The second gave a very detailed test plan, with expected outcomes, but no evidence of these outcomes. This is worth no marks, unless the teacher has actually seen these results on screen when they can gain a maximum of two. The third tested the various validation methods imposed upon the input data, but nothing else. This is rarely worth more than two marks.

What is wanted is a series of tests, set out in a test plan and accompanied by screen shot evidence, that show that all aspects of the program work, and do what the programmer set out to do.

It was difficult to moderate work where the Mark Sheet was not enclosed with the projects and the Moderator had no idea of the mark that he or she was moderating.

Overall the quality of the majority of the projects made them a pleasure to read and Examiners trust that the candidates gained satisfaction from the hard work that they had put into them.

# COMPUTING ADVANCED LEVEL

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Paper 5218

Further Systems and Software

## General comments

Once again, thank you to the candidates for their efforts in making the presentation as good as they could. It makes the task of examining so much easier for the examiners if the evidence is laid out properly, and it benefits the candidate because it makes it far less likely that some important evidence will be missed if the work is set out properly. There are no indications of the poor presentation which blighted some of the Paper 1 responses that have been submitted this session. It will be interesting to see if these candidates have grown out of the problems by the time they do the Paper 3 next year.

There was general agreement among the examining team that the paper was slightly harder this session. While the candidates obviously will not suffer in their results because of this, it was felt that it was not all the fault of the paper. The problem seemed to be that candidates considered that there were no 'really simple' sections of the paper this year. I would take issue with this as the comments in the main body of the report will testify, but would agree that there were particular areas of the paper which were based on unfamiliar areas of the syllabus and perhaps these turned what should have been very straight forward questions into more difficult ones.

There were a few instances of candidates apparently having time problems, where script responses stopped before the end of **Question 11** for instance. While accepting that this would restrict the marks for those candidates, it was apparent that poor examination technique had been used in the earlier parts of the paper which had taken disproportionate amounts of time. The management of time, in so far as it extends to the ability to be discriminating in responses, is a part of all examination and candidates who have used a scatter gun approach to questions, where they have written down as much as they could think of about a topic on the basis of 'the right answer has to be in there somewhere', cannot be surprised if they do not earn the credit they were hoping for and also cannot be surprised if they run out of time. The worst example in this session was a candidate who wrote a one and a half page essay about banking for **Question 5(a)** which was only worth one mark and the examining team were expecting simple one or two word answers.

There are still a number of candidates who should not be taking the examination. Any candidate entered for an examination who scores a single figure mark is either not intellectually capable of sitting the paper, or has not been properly prepared for what they are going to see. Either way, it is a disheartening experience for the examiners to be faced with their paper and it must be worse for the poor candidate sitting the examination knowing that they cannot answer the questions.

## Comments on specific questions

### **Question 1**

- (a) This is an example of what was designed as a simple question to allow candidates to accrue some marks. However, candidates did not find it simple because the terminology was not what they were used to. One examiner commented that the responses were better than when the question had been asked in the past, but that they were not as good as they should be for what are, after all, simple definition questions. The lesson for teachers is that the whole syllabus should be covered and that it is dangerous to try to predict what will be on the paper. The most common response for transparency was that nothing was hidden from the user and that they had control over everything on the network. This was a reasonable guess if you did not know the term.

- (b) Generally considered to be a more difficult question than part (a), but the responses were much better. The suspicion must be that the reason is that this was more familiar territory. Many showed poor examination technique again and did not see, or take notice of, the restriction 'two'. Teachers should by now be aware of the examiners' philosophy that we will try to find the best if an extra option is given by the candidate, but that this does not extend to multiple alternative answers. Some candidates exhibited the Pavlovian reaction so common in the stress of an exam room, where the candidate latches on to a word in the question. Many candidates here saw the word 'components' and described two of the components of the CPU. Although this type of error is expected when candidates sit a paper, this particular error was more common than is usual and lead to an inspection of the question. After thinking about it carefully, I do not think there is anything wrong with the question, and simply urge candidates, as generations of teachers have done before me, to read the whole of the question.

### Question 2

Answers were very often superficial. 'Keyboard and mouse' are hardly A Level types of responses. However, they could be considered more preferable to the type of response that decides that the 'RAM should be 512 gazillion bytes because we need to do a lot of word processing'. This type of question does not want candidates to be so specific. To start with changing 'norms' for hardware specifications make such an answer unreasonable while different norms in different parts of the world make such specific answers unmarkable. The examiners are looking for an indication that candidates understand that the requirements of word processing an essay are different from the requirements for streaming a video of a drama production from the server across the terminals on a network.

For a list of the expected responses to this and to all the other questions please refer to the published mark scheme

### Question 3

- (a) Well answered.
- (b) Very badly answered. Most candidates were quite happy with part (a) and consequently they must have understood the concept of using a list rather than an array. However, when they got here they went straight back to the array and gave algorithms for that.

### Question 4

A surprising number did not identify the data very well, while most were unable to see further than the inevitable 'hacking'. However, most candidates managed to contrive a healthy score from these bare facts.

### Question 5

Most were able to give an example of data, though the suspicion was that they hit upon one worthy of credit more by luck than by judgement. However, few were able to explain what made data valuable to that organisation. While agreeing that this is one of the areas of the syllabus which is, perhaps, leaning toward IT, it is on the syllabus and is fairly simple to cover.

### Question 6

The best answered question on the paper, with many candidates scoring full, or nearly full, marks.

- (a) Well answered by most.
- (b) There are still candidates who write down that a global variable can be used around the world, but thankfully it has become the exception rather than the rule, and responses were, again, good.

- (c) Because of the type of question, that there must be a distinct difference, it is difficult for the examiners to interpret a candidate's answer in any other way than literally. Consequently, this question does catch some candidates out whose command of English is not good enough to explain the very difficult concepts involved. However, this is becoming rare and the majority of candidates scored well here.
- (d) Well answered by all but those who demonstrated a lack of preparation for the exam.

#### Question 7

Very well answered with **b(ii)** proving to be a good discriminator at the top end.

#### Question 8

Many scored full marks in part **(a)** and then struggled in part **(b)**, probably because candidates are not used to being asked why you do not do something.

#### Question 9

This was another good discriminator. Most were able to give an authoritative answer in **(a)**, though often their authority was based on guessing which way round the answers should be. Very few were able to give the right answer in part **(b)**, the majority giving the answer 64. While understanding where this came from, it is disappointing that candidates at this level cannot answer what is a very simple piece of floating point arithmetic. Some candidates were able to give full and convincing explanations in part **(c)**, and these candidates should be congratulated for their understanding of what is a difficult concept to explain in the stressful circumstances of an examination room.

#### Question 10

Remember that all parts of the syllabus must be examined from time to time. Candidates are obviously more schooled in BNF than they are in syntax diagrams. The majority did not even bother to attempt a diagram, but instead produced BNF to define a variable name. This is a shame because most students find concepts easier to understand when they are presented in the form of diagrams and this question was aimed at a lower level than the equivalent BNF question would have been, although that is not how it turned out. Some candidates who attempted the diagram failed to use arrows to show an indication of the direction of the flow of the logic.

#### Question 11

- (a) Very Centre-based. If the candidates had covered the work this was three easy marks, but too often the candidates were reduced to trying to guess from the words what they might mean, with many talking about physically outside and inside the computer for the first and last. Others tried to suggest users such as the technician, the operator and the management. Such guesses, when common across a Centre, lead one to imagine that the work has not been covered.
- (b) Same again. If the work had been covered then candidates were scoring most of the marks, but too often the candidates were back to trying to guess, which some were successful in doing, particularly for the 'manipulation'.

#### Question 12

This was meant to be a nice finishing question allowing candidates to explore the concept of training using computer systems, and for many that is how it turned out with some very perceptive and high scoring responses. However, for many this was another of those Pavlovian questions. Perhaps candidates were getting tired by now but many candidates saw the word 'implement' and wrote a long answer based on direct, phased...implementation methods.



# COMPUTING ADVANCED LEVEL

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**Paper 5219**

**Further Systems and Software**

There were no entries for this paper.