



GCE AS EXAMINERS' REPORTS

COMPUTER SCIENCE AS

SUMMER 2018

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COMPONENT 1: FUNDAMENTALS OF COMPUTER SCIENCE

The majority of candidates demonstrated that they understood and could answer questions on a range of topics from the specification. The mean mark would suggest that candidates found the paper slightly more accessible than 2016 and 2017. It was particularly pleasing to note that seven of the thirteen questions had a facility factor above half, with candidates answering the questions on logical operators, fragmentation and writing an algorithm for an unseen problem well.

It was disappointing to see most candidates having difficulty in answering the question on file attributes and many candidates giving poor responses for the question on batch processing.

Individual Questions

- Q1. Only a minority of candidates answered the question on networking standards and protocols well.

Candidates generally struggled with the first part of the question as they were unable to explain the importance of networking standards beyond the fact that they allow for communication over a network. Very few candidates considered the fact that standards help to promote more competition and hold down prices as well as allowing for cross-vendor compatibility.

A majority of candidates were able to describe how traffic is routed on a packet switched network well.

- Q2. Around half of candidates were able to compare the functional characteristics of a Solid State Drive and Blu-ray Optical Drive confidently.

It was pleasing to note that a majority of candidates are now using strong technical terminology when comparing the technologies used for each storage type in terms of NAND flash memory, lasers, pits and lands.

- Q3. Many candidates were confident in their use of logical operators to complete the given truth table and also when discovering the state of a bit and clearing a register.

- Q4. Most candidates were able to give suitable examples of data that would be contained in a variable length field and an example of data that would be contained in a fixed length field. A third mark was awarded to most candidates who were able to describe one difference between fixed and variable length records. Very few candidates gave more than one difference.

- Q5. This was the best answered question of the paper with many candidates able to explain the difference in disk access speeds when loading File A and File B into main memory. These candidates were also able to suggest how this can be overcome.

- Q6. Many candidates were able to convert the given hexadecimal numbers into binary form and add them together using binary addition. A few candidates incorrectly added the numbers together and made an error with their carry bits.

Around half of candidates were able to convert 15.875_{10} into the given floating point form. These candidates were also able to convert the given floating-point number into denary form, however, a significant number of candidates did not calculate the denary value of the mantissa as required by the question.

Many candidates were able to give one advantage of representing numbers in integer form and one advantage of representing numbers in floating point form. Only a few candidates gave two advantages for each to gain full marks for the question part.

- Q7. Only a minority of candidates were able to state the minimum storage requirements for each of the given data types. Many candidates correctly stated the requirements to store Boolean and an ASCII string. Fewer candidates were able to correctly state the requirements for an ASCII Character, with fewer still stating the correct storage requirements for a short integer.

- Q8. It was pleasing to see that the algorithm question was one of the best answered questions of the paper. An improvement was seen nationally in the standard of answers given for this type of question this series. Where candidates lost marks, this was primarily due to the lack of validation for weight input (real) and failing to allow a rogue value to terminate the loop.

- Q9. Surprisingly, this question was poorly answered by many candidates. From the responses seen, it would appear that candidates were unfamiliar with the term batch processing.

- Q10. It was pleasing to note that the majority of candidates were able to simplify the given Boolean expression confidently. It is essential that candidates show each step as required by the question to attain higher marks. A common mistake seen this series was to simplify incorrectly as follows $\bar{S}.S = 1$.

- Q11. A majority of candidates were able to describe the term sequence in algorithms well. These candidates were also able to describe how an insertion sort algorithm operates.

A few candidates were able to explain why the given insertion sort algorithm will fail and fewer still were able to suggest a suitable change that could be made to the algorithm to overcome this problem.

Around half of candidates were able to name and describe a different sort algorithm. The most popular choice being a bubble sort.

- Q12. Surprisingly, this was the most poorly answered question of the paper with most candidates seeming unfamiliar with the term file attributes. Some candidates gave responses linked to file extensions, such as .jpg and .doc and others wrote about metadata, image resolution etc.

- Q13. It was pleasing to see so many candidates gain a mark in the top mark band for this extended prose question. Candidates were confident in describing the methods used for the investigation and analysis stage of the systems analysis process and suggested methods that would ascertain the needs of the client. Around half of candidates were awarded further credit for expanding on the benefits and drawback of each method.

Descriptions of the possible effects of increasing the use of computers in the workplace in terms of the nature of employment and wider society were slightly weaker and prevented many candidates from entering the top mark band. Answers here were often superficial and limited to job loss.

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COMPONENT 2: PRACTICAL PROGRAMMING TO SOLVE PROBLEMS

Introduction

Component 2 is a practical examination with candidates required to demonstrate the application of knowledge and understanding at all times.

General Remarks

Most of the candidates demonstrated a good understanding of the specification, question attempted percentages were not available for this series. Many candidates were well prepared and many excellent answers were evident. There was evidence also that some candidates had been well prepared for some of the practical programming elements however, some genuinely unique attempts were made at creating a simple calculator.

Comments on Individual Questions.

- Q1. This was generally well answered by candidates. Candidates used technical terminology such as class, object, method, inheritance, public, private or parameter well.
- Q2. This was generally not well answered. Candidates are applying their own experience of backup (small USB pens) to an appropriate method for a company. Few candidates discussed an appropriate backup regime, such as grandfather, father, son etc.
- Q3. This was considered to be a highly demanding question, requiring practical application of arrays and algorithms. Candidates generally scored well here, however, some did not reference the array correctly.
- Q4. As is usually the case with algorithm questions, some candidates scored full marks but a large number seemed to have no clear idea about algorithm design.
- Q5. i. Generally, there was no improvement in answering this type of question in this series. It was disappointing to see that some centres had not thoroughly prepared candidates for the prospect of fixing “broken” code where the line involved file handling. Python was the most popular language opted for by candidates, with Visual Basic being the second most popular with the least used being Java.
- ii. This question required candidates to program a simple calculator. It was quite surprising how many different interpretations of this program were created by candidates that were not in the “classic” calculator design. Credit was given for functionality, no matter how the candidate had implemented it.
- iii. This question was generally well answered. Many candidates showed detailed annotation of the code they had used.



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