

COMPUTER SCIENCE

<p>Paper 0984/12 Computer Systems</p>

Key messages

It would be beneficial for candidates to show a greater use of technical terminology in their responses. It would also be beneficial for candidates to note the key terms given in a question and structure their response based upon these. Candidates should note that any context given in a question should be used in the answer, and their answer should be applied to the given context.

General comments

Candidates and centres are reminded that written papers are scanned in and marked on computer screens by Examiners. Consequently, if a candidate writes the answer to a question on an additional page, they must indicate very clearly to the Examiner where their revised answer is to be found. Also, if answers have been crossed out, the new answer must be written very clearly, so that Examiners can easily read the text and award candidates the appropriate mark.

Question 1

- (a) Most candidates were able to select the correct option.
- (b) Most candidates were able to give another type of malware. The most common incorrect answers were anti-malware and anti-virus.
- (c) Many candidates were able to give the correct type of software.

Question 2

- (a) Most learners were able to give the correct denary value.
- (b) Most learners were able to give the correct hexadecimal number.
- (c) Many candidates were able to correctly complete the binary shift. The most common incorrect answer was from candidates who performed the binary shift to the right and not the left.
- (d) Some candidates were able to show suitable working and the correct answer. Some candidates only demonstrated partial working. Candidates are reminded to include all the working they do in their response.
- (e) Some candidates were able to add the two binary values and clearly showed that there was an overflow from the result. Some candidates had only shown that they had converted the values to denary, added them and then converted the result to binary. Candidates are reminded that this is not a valid method of working as the question requires binary addition to be used.

Question 3

- (a) (i) Few candidates were able to accurately state what is meant by the clock speed. Many candidates gave a describe description such as it is the speed at which the CPU runs.
- (ii) Most candidates were able to state that it would increase the performance of the CPU. Few candidates were able to expand upon why this would happen.

- (b) Many candidates were able to state that the MAR stores addresses. Few candidates were able to expand their description with further detail.
- (c) Some candidates were able to identify the list of commands as an instruction set. Some candidates gave the answer mnemonics. These are used in an instruction list but are not accurate for the name of the list.

Question 4

- (a) Most candidate could give at least one characteristic of an embedded system. The most common correct answers were that it performs a specific function and it has a microprocessor.
- (b) Many candidates were able to identify the three correct examples.

Question 5

- (a) Many candidates were able to give a suitable benefit.
- (b) Many candidates were able to give a suitable drawback.
- (c) Few candidates were able to provide an accurate description sample resolution. The most common incorrect answers describe sample rate instead of sample resolution.
- (d) Most candidates were able to identify the correct compression method.

Question 6

Many candidates were able to give the correct transmission methods. Some candidates only gave part of the transmission method used. For example, they gave serial data transmission instead of stating it was serial simplex transmission.

Question 7

- (a) Many candidates were able to provide at least one suitable input device. The most common correct answer was barcode scanner. Some candidates were too vague in their answer just stating scanner.
- (b) Few candidates were able to provide an accurate and technical explanation of how the sensor and microprocessor would be used. Many candidates gave a very generic response with little or no reference to the context. Candidates are reminded to apply any context given in a question to their answer.

Question 8

- (a) Few candidates were able to provide an accurate diagram about the process of data interception. Many candidates demonstrated the data being transmitted from one device to another. They also demonstrated that a third party intercepted the data mid transmission. Very few candidates referred to the data packets being examined by a packet sniffer.
- (b) Some candidates demonstrated understanding that encryption could help keep the data safe. The most common incorrect answer was firewall; however, a firewall cannot help keep the data safe mid-transmission.

Question 9

Many candidates were able to complete the correct terms but few candidates were able to provide correct descriptions.

Question 10

- (a) Many candidates were able to give a characteristic of AI. The most common correct answer was the ability to learn.
- (a) Very few candidates were able to provide a fully accurate and technical description about how an expert system operates. Some candidates were able to name some or all of the components involved but very few could describe their role in the process. It would be beneficial for candidates to have a greater understanding of how an expert system operates.

Question 11

- (a) Many candidates were able to state what a flow sensor measures. Some responses lacked detail stating it measures the flow, but no reference to the amount of flow or the flow of what kind of material.
- (b) Some candidates were able to provide a relevant advantage. Many candidates did not provide an advantage in context of the question. They provided advantages such as they can work 24/7. However this would not be an advantage the employee.
- (c) Many candidates were able to provide a relevant disadvantage. Most referred to high setup or maintenance costs.

Question 12

- (a) Many students were able to give at least one feature of a digital currency. The most common correct answer was that it is a decentralised system.
- (b) Many candidates were able to identify the correct name for the process.

Question 13

- (a) (i) Most candidates were able to identify the correct example.
 - (ii) Many candidates were able to give a correct characteristic. Some candidates stated that primary storage is volatile. This answer was incomplete as primary storage is both volatile and non-volatile.
- (b) Many candidates were able to select the correct missing terms.

COMPUTER SCIENCE

<p>Paper 0984/22 Algorithms, Programming and Logic</p>
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Key messages

Candidates who read the questions carefully, fully answered the questions that were asked and used the appropriate context.

Candidates who answered algorithm questions in the manner stated in the question, for example using pseudocode or a flowchart as required, achieved the best marks. Candidates who had learnt the syntax of the pseudocode as defined in the syllabus for this course, answered pseudocode questions accurately.

Candidates need to make sure that any answers they provide are appropriate for the command word used in the question. For example, questions that begin with 'Explain' will require more detail than those beginning with 'State'. In addition, explain type questions usually require an explanation of how something was done, rather than a simple description of what was done.

Candidates must ensure that they use only pseudocode, Python, Java or VB.NET when answering the final question, and they must ensure that the solution accurately follows the details given in the scenario.

General comments

Candidates demonstrated a good overall understanding of the requirements of the paper with very few questions left unanswered.

Candidates are reminded that when answering the final programming question, they should read the scenario through to the end before beginning their solution. Candidates do not need to declare variables and arrays if the scenario states that arrays and variables do not need to be declared. Candidates should proceed straight to the writing of the program, ensuring that the variables and arrays defined in the scenario are used as stated in the scenario.

Comments on specific questions

Question 1

Many candidates correctly identified verification as a value that has not changed during input. However, a significant number of candidates incorrectly selected the option that stated verification made sure that a value entered is correct.

Question 2

- (a) Many candidates correctly stated format check, which was the only correct answer for this question. Other incorrect validation checks were seen, including type check and presence check.
- (b) Candidates were required to give an example of normal data and an example of abnormal data that could be used to make sure the check in part (a) is working correctly. In each case, a reason was required. The normal data needed to be any series of digits in the format 99/99/9999 and the abnormal data could be anything that wasn't a series of digits in the given format, or anything that was an attempt at test data that wasn't a series of digits. The reasons should state why the test data was chosen, and whether or not it would be accepted. For example, for normal data: 30/12/1990 is in the correct format so it should be accepted and for abnormal data: 30/Dec/1980

the month is in the wrong format so this should be rejected. A wide range of answers were given and the full range of marks awarded.

- (c) Candidates were asked to describe how a length check could be used as a further validation check for a date that had been entered. Many candidates correctly stated that this check would ensure that the date was 10 characters in total (if the slashes are included). Some candidates went on to expand the answer to state that if the answer was not the correct length, it would be rejected, and achieved the second mark. A significant number of candidates did not answer the question in the correct context and incorrectly wrote about checking the length of a password, which was not part of the question.

Question 3

- (a) Most candidates achieved high marks. These candidates linked the pseudocode statements to their most appropriate use.
- (b) A wide range of marks was seen for this question. Many candidates achieved some marks. Candidates did generally find this question difficult. Candidates are advised to practice writing algorithms, making use of the pseudocode guide provided in the syllabus.

Question 4

- (a) A good range of marks was seen for this question. Most candidates identified and corrected at least one error in the given algorithm. A significant number of candidates achieved high marks.
- (b) Candidates were required to describe how the algorithm could be changed for the reason stated in the question. This required a written response that described specific changes made to the algorithm and where these changes would be made. Many candidates incorrectly only rewrote the algorithm, which was not required, or gave answers that were too vague.

Question 5

This question was answered well, with most candidates achieving at least two marks for explaining how variables and constants should be used when creating and running a program.

Question 6

- (a) This trace table question was answered well and many candidates achieved full, or near full marks. Common errors including not initialising totalling or counting variables in the trace table or adding incorrect punctuation such as extra commas or quotation marks to the output.
- (b) Candidates who described the algorithm as adding together a batch of numbers, or similar, achieved a mark. Candidates who then stated that this total along with the average of the numbers was output, achieved both marks.

Question 7

Candidates appeared to find this question difficult. A wide range of marks was seen with some candidates achieving high marks.

Question 8

Some answers seen for this question were well written, with many candidates achieving at least one mark. Some provided long answers that gave the definition of a procedure but didn't explain why a programmer would use them when writing a program.

Question 9

- (a) A well answered logic circuit question. Most candidates achieved some marks. Many candidates achieved high marks.
- (b) Most candidates answered this question well. A significant number of candidates made some errors when working through the logic expression, leading to incorrect outputs.

Question 10

- (a) Candidates who correctly stated that the given table had 18 rows achieved the mark. Some candidates incorrectly stated the number of columns and others incorrectly stated the number of rows including the header row.
- (b) Most candidates correctly identified `Code` as the primary key field and most of these candidates stated the reason for its choice was that it was a unique identifier.
- (c) Most candidates answered this question well. They correctly identified suitable data types for the given fields.
- (d) This question achieved a mixed set of results. Most candidates achieved at least one mark. Other candidates achieved all the marks for completing a structured query language statement for the stated query.

Question 11

Candidates were required to complete an extended program using pseudocode, Python, Java or VB.NET to meet a set of requirements given in a scenario based on an online ordering system for wood flooring materials, including inputting the dimensions of a room, calculating the floor area and working out the cost of the wood required.

A wide range of quality of responses was seen, with most responses using either pseudocode or Python, but a small number of Java and VB.NET solutions were also seen.

The full range of marks was awarded, with many candidates achieving high marks. Candidates whose responses closely matched the requirements stated in the scenario, ensuring that all points were fully covered, achieved the highest marks.

Candidates who achieved full or near full marks also followed the remaining guidance at the end of the scenario well. This included the comprehensive use of comments to explain what each part or sub part of the solution was doing and the use of appropriate messages to accompany all inputs and outputs.

The best responses also correctly used all the data structures given in the scenario in the way they were expected to be used as stated in their descriptions.