COMPUTER SCIENCE

Paper 0478/12
Paper 1

Key messages

If a candidate writes the answer to a question on an additional page they must indicate very clearly to the Examiner where the revised answer can be found. Also, if an answer has been crossed out, the new answer must be written very clearly, so that Examiners can easily read the text.

In the examination questions, the key words 'describe' and 'explain' require different types of answer. If 'explain' is used then a reason should be given rather than a description.

General comments

Nearly all candidates attempted all the questions on the paper.

Comments on specific questions

Question 1

Most candidates correctly named at least two sensors.

Question 2

Nearly all candidates correctly identified the five logic gates shown.

Question 3

(a) Most candidates correctly identified serial transmission and could state at least one correct reason for their choice.

(b) Nearly all candidates identified the correct parity for each register.

(c) Nearly all candidates gave another correct method for checking for errors in the transmission of data.

Question 4

(a) Most candidates correctly converted the plain text to cypher text using the symmetric encryption shown.

(b) Some candidates correctly shifted the plain text five places to the right. Common errors included incorrectly shifting the text to the left or incorrectly shifting the cypher text rather than the plain text.

(c) Most candidates correctly identified the cypher text given in **part (a)** as the more secure.

Question 5

This was generally well answered.

Question 6

Nearly all candidates identified the correct description for most of the operating system functions. Common errors included mixing up, 'Interrupt', 'Memory management' and/or 'Spooling'.

Question 7

Most candidates correctly stated the appropriate type of file compression for each of the given files. Some candidates then incorrectly went on to describe the type of compression used rather than explaining why that method was chosen.

Question 8

(a) This was generally well answered.

(b) Some candidates gave the contents of the register correctly in all three number systems. Common errors included incorrectly stating the binary for the integer value of 9 rather than the binary value of the ASCII value for 9.

(c) Better candidates correctly identified the binary number required. A common error was not to mask out the two ones for the ASCII code.

Question 9

Most candidates gave an appropriate example of a biometric password and stated that a text based password consisted of characters. Better candidates then went on to describe what was different, for example 'biometric passwords are unique to a person and cannot be shared'.

Question 10

Most candidates could correctly describe at least one difference between a barcode and a QR code. Some excellent answers for this question were seen.

Question 11

The full range of marks was awarded for this question. Common errors included incorrectly describing what the translation did rather than explaining why that translator was the most appropriate one to use.

Question 12

(a) Many candidates were unsure about uses for hexadecimal. Correct uses identified included MAC addresses and colours in HTML.

(b) Most candidates correctly stated that programs displayed using hexadecimal were easier to understand and debug. A common error was stating incorrectly that hexadecimal took up less storage space.

Question 13

(a) Many candidates gave vague explanations that were not creditworthy; most candidates could provide at least one correct example.

An example for primary storage that would gain both marks is:

Primary storage	is directly accessible by the CPU.
Example	RAM

(b) Many candidates correctly calculated the maximum storage space required for the photographs. Some candidates incorrectly suggested the use of email or cloud storage thus not taking into account the statement in the question that copies are to be sent through the ordinary postal service.

Question 14

(a) This was generally well answered.

(b) This was generally well answered.

COMPUTER SCIENCE

Paper 0478/22
Paper 2

Key messages

Candidates who had completed the tasks for the pre-release (reaction speeds of students) were able to provide answers for ***Section A*** that showed good understanding of the tasks undertaken. Candidates who read each question carefully and answered the question as set on the paper performed better than those who had memorised code from their solution for the task mentioned in the question and wrote that.

Candidates should take care when declaring variables, constants and arrays to ensure that the identifier declared could be used in a program. Identifiers must not contain spaces. Once declared, the same identifier name should be used throughout the answer.

General comments

Nearly all candidates attempted all the questions on the paper

Comments on specific questions

Section A

Question 1

(a) (i) Nearly all candidates correctly declared an array to store reaction times for the whole school.

(ii) Most candidates correctly changed their declaration for a sample of 50 students.

(iii) Few candidates explained why an array was an effective data structure. A common misinterpretation of the question was to describe an array incorrectly rather than explaining why it was an effective data structure for the reaction times.

(b) Algorithms were usually written in pseudocode or program code; few flowcharts were seen. Most candidates correctly showed the steps required for task 1. Some candidates incorrectly included the validation performed by task 1.

(c) Most candidates showed a good understanding of test data. Candidates needed to provide example data for age to gain the example data marks.

(d) Better candidates provided the programming statements required for their solution together with a written explanation of the purpose of each statement. Some candidates incorrectly wrote about finding the average reaction time for each of the school houses rather than finding the average reaction time for a specific input of age and house.

(e) Some candidates showed good understanding of reaction times, realising that the fastest reaction time would be the lowest value and selecting that value.

Section B

Question 2

Most candidates correctly identified two or three errors. The best candidates showed good understanding of the program code by suggesting that `INPUT AGE` should be added before `ENDWHILE`.

Question 3

Most candidates correctly identified the data types for EmployeeID, Manager and AnnualHoliday and could provide appropriate validation checks.

Question 4

Most candidates showed the skill of using a trace table. Some candidates provided a 'rough answer' in pencil and a final answer in ink; this is not recommended, as extra values can be seen in the trace table.

Question 5

(a) Most candidates attempted to rewrite the pseudocode and correctly used the `WHILE … DO … ENDWHILE` construction. Common omissions included not initialising the counter before the start of the loop and not updating the counter within the loop.

(b) Candidates correctly explaining the differences between the two types of loop gained full marks. Some candidates described both types of loop and incorrectly included similarities.

Question 6

(a) Most candidates demonstrated their understanding of a query-by-example grid by showing the correct names. Common errors included writing the names down in the order seen in the table instead of in the ascending order of the **User** field and including extra fields and/or text.

(b) Most candidates showed some correct fields in their query-by-example grid. Common errors included incorrect field names, incorrect fields, incorrect criteria and not including the table name.