UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education
Advanced Subsidiary Level and Advanced Level

COMPUTING **9691/13**

Paper 1 **May/June 2010**

2 hours 30 minutes

Additional Materials: Answer Booklet/Paper

6539645528

READ THESE INSTRUCTIONS FIRST

If you have been given an Answer Booklet, follow the instructions on the front cover of the Booklet.
Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use a soft pencil for any diagrams, graphs or rough working.
Do not use staples, paper clips, highlighters, glue or correction fluid.

Answer **all** questions.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

IB10 06_9691_13/2RP

UNIVERSITY of CAMBRIDGE International Examinations

1 **(a)** **(i)** State **two** features of RAM which would not be true of ROM. [2]

(ii) State **two** pieces of software found in RAM when a computer is processing data. [2]

(b) **(i)** Explain why a NIC is used when a computer is to communicate with other computers. [2]

(ii) State **one** other piece of hardware which is needed for successful communication to take place. Justify your answer. [2]

2 An examination board sets multiple-choice examination papers that are automatically marked by a computer system. The system allows for monitoring by the personnel in the department and keeps the results until they are required.

(a) Select appropriate peripheral hardware for this system, justifying your choices. [8]

(b) Describe how the system reads the answers on the examination papers and then produces the examination results. [6]

3 A large chain of stores runs a store card scheme.
Customers who want to apply for a card do so at the information desk in any of the stores. Their details are typed into the computer.
A card is printed immediately with the customer's picture on it so that it cannot be used by someone else.

By describing the hardware, software and data storage, explain how the system prints the picture onto the card. [6]

4 **(a)** Define the term protocol. [2]

(b) **(i)** Explain what features of a protocol need to be established before communication can take place. [5]

(ii) State **one** advantage and **one** disadvantage of using circuit switching rather than packet switching. [2]

5 **(a)** A garage, which includes car sales and car servicing, has a computer system. State how each of the following types of generic applications software could be used by the garage.

(i) Desktop publisher

(ii) Presentation software

(iii) Database software

(iv) Communication software [4]

(b) Identify an application area in the garage for which generic application software is not appropriate.
Justify your choice. [2]

(c) Describe how mailmerge can be used to contact all customers who bought a petrol-engine car before 2009, in order to encourage them to come and buy a new car. [5]

The remaining questions refer to the following information.

Details of students in a school are stored in the STUDENT file.

A school employs administration staff. One of the tasks carried out by these staff is to maintain the details of students in the STUDENT file.

Amendments to the student records are necessary because of:

- occasional changes to personal details
- yearly changes to information like the year and form that a student is in
- regular changes caused by things like marks in examinations needing to be updated.

Access to the data is available to teachers while most enquiries and all changes are made by the administration staff.

6 **(a)** Explain why indexed sequential access to the data in the file would be sensible. [4]

(b) Describe, with the aid of a diagram, an indexing system which could be used to allow indexed sequential access to the records held in the STUDENT file. Use the information about the student records stated above. [4]

7 Backup files and archive files are taken from the STUDENT file.

Explain the difference between backing up and archiving a file, making reference to the requirements of this application. [5]

8 **(a)** When a teacher wants to find out some information about a particular student, they use the computer terminal in the staff room and first of all have to identify the student and what information they require.

(i) Describe a suitable human-computer interface, other than a graphical user interface, which the teacher could use. [3]

(ii) Information about students which is stored in the STUDENT file is sensitive and needs to be protected.
State a piece of information that would be sensitive and describe steps which can be taken to protect it. [5]

(b) The school has a website where potential parents can find out about the school. Parents of students at the school can also access the records about their child and make payments electronically.

(i) Using this example, explain the difference between passive and interactive information systems. [4]

(ii) The website has only recently been brought into operation.

Identify **two** different types of user of the website and describe different types of documentation which each will need. [6]

9 Candidates are advised to use either pseudocode or a flow chart to answer this question, although other forms of algorithmic representation will be credited.

(a) Students take exams in all their subjects at the end of every year. A procedure is to be written which inputs the marks of a student from the STUDENT file and calculates the mean mark for that student.

Produce an algorithm which will carry out the above task. The procedure is to be called MEAN. [4]

(b) The school awards a prize each year to the students who achieve the highest mean mark in their form.

Produce an algorithm for a procedure called PRIZE which will determine which student will win the prize for a particular form. The name of the form and the name of the student should then be saved to a file called PRIZES.

(You should use MEAN in this final algorithm without reproducing the detail in **part (a)**.) [7]