

Cambridge
International
A Level

Cambridge International Examinations
Cambridge International Advanced Level

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APPLIED INFORMATION AND COMMUNICATION TECHNOLOGY

9713/33

Paper 3

May/June 2016

1 hour 15 minutes

Candidates answer on the Question Paper.

No additional materials are required.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.

Write in dark blue or black pen.

Do not use staples, paper clips, glue or correction fluid.

You may use an HB pencil for any diagrams, graphs or rough working.

DO NOT WRITE IN ANY BARCODES.

Answer **all** questions.

The number of marks is given in brackets [] at the end of each question or part question.

The businesses described in this paper are entirely fictitious.

This document consists of **18** printed pages and **2** blank pages.

Scenario 1**Questions 1, 2, 3, 4, 5, 6 and 7**

A2Z is a company which specialises in developing new drugs for treating human illnesses. They use a supercomputer in their research.

Daniel works as a publisher for the company and produces a monthly magazine.

The magazine contains articles about the research being carried out both in the laboratories and at research sites around the world.

Daniel employs a number of reporters to write the articles for the magazine. The reporters are expected to gather information from the scientists.

The reporters are provided with a laptop.

Articles may be produced in the offices or while travelling but have to be sent to Daniel in time for publication in both hardcopy and electronic formats.

1 Give reasons why a reporter would use each of these input devices when preparing their articles.

(i) A4 scanner

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..... [2]

(ii) microphone

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2 Describe the limitations of using a laptop for creating an article and sending it to Daniel.

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- 5 The company decides to produce an electronic version of the magazine.
Discuss the benefits and drawbacks of producing the magazine in electronic format.

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7 (a) Describe what is meant by the term 'supercomputer'.

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(b) Describe how supercomputers are used in drug research.

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Scenario 2

Questions 8 and 9

SRCo is a scientific research company that employs a number of skilled technicians to support the scientists in its laboratories. The technicians may work in more than one laboratory depending on the needs of the scientists.

The company has a human resources department that keeps a database. The database stores details of the technicians. The human resources department issues each technician with an identity badge.

Jasmine works in the human resources department where her job is to create a new record in the database and issue a badge to a technician when they join the company.

8 (a) Explain why Jasmine would need to use each of the input devices below when she creates a new record in the database.

(i) digital camera

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.....[1]

(ii) keyboard

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.....[1]

(b) (i) When a database is created, the fields in the database are usually assigned a data type. Explain why it is necessary to assign a data type to a field.

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(ii) The details of each technician are stored in fields in the database. For each of the fields shown, complete the table to give the **most appropriate** data type and a reason for using that type.

Details stored in the field in the database	Most appropriate data type used for that field	Reason for using the chosen type
Technician's last name		
Technician's gender		

[2]

(iii) Explain why it is **not** appropriate to use a 'numeric' data type for the field in the database that stores the telephone number of the technician.

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Scenario 3**Questions 10, 11 and 12**

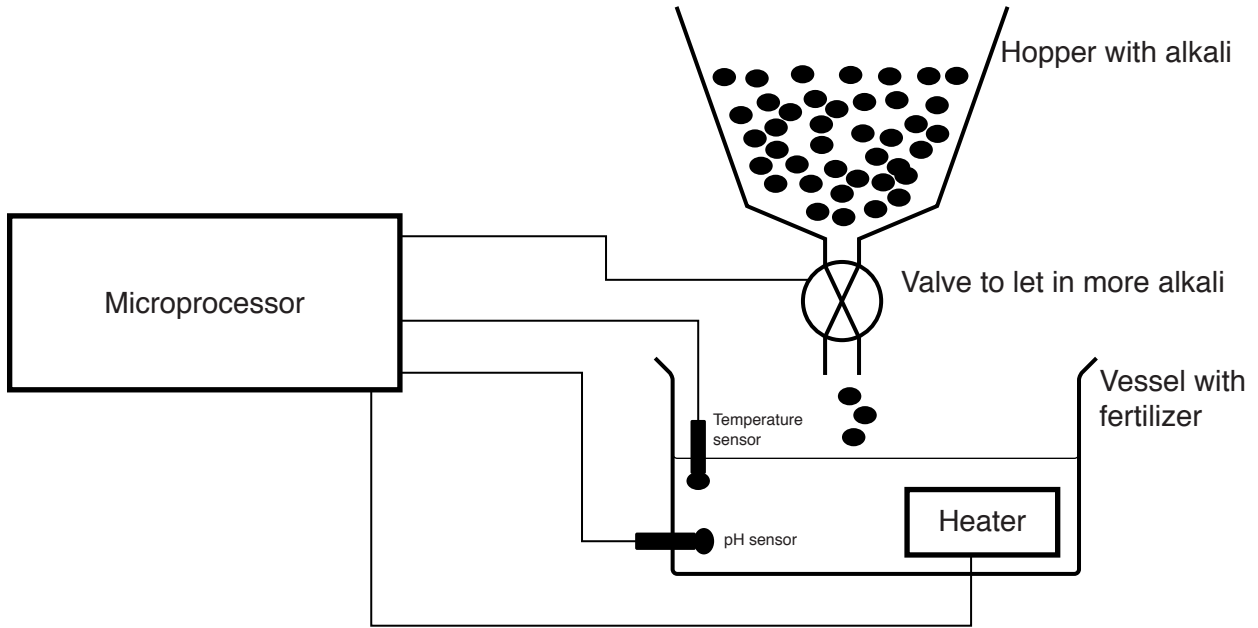
KemCo is a chemical company that develops, manufactures and markets fertilizers for growing crops.

Colin, the marketing manager, uses computer-based financial models to assess whether or not the company should develop, manufacture and market a new fertilizer.

The manufacturing process of the fertilizer is monitored and controlled by microprocessors.

Once the fertilizer is ready to sell, Colin uses primary and secondary marketing techniques to help him market the fertilizer.

- 11 The fertilizer manufacturing process is dependent on temperature and pH. Alkali is used to raise the pH of the fertilizer in the vessel. A diagram of the process is shown below. A microprocessor is connected to the sensors, valve and heater.



Describe how the microprocessor controls the conditions in the vessel.

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Question 12 is on the next page.

12 (a) Explain the differences between primary and secondary research.

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(b) Describe how Colin could use computer-based research techniques to carry out primary research.

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