UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Advanced Level

CANDIDATE
NAME

CENTRE
NUMBER

CANDIDATE
NUMBER

APPLIED INFORMATION AND COMMUNICATION TECHNOLOGY **9713/13**

Paper 1 **May/June 2013**

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, highlighters, glue or correction fluid.
You may use a 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 **16** printed pages.

UNIVERSITY *of* CAMBRIDGE
International Examinations

[Turn over

Scenario 1
Questions 1 and 2

The North Siberia Motor Company is a manufacturer of cars and vans. It has a modern factory and a computerised production line in Verkhoyansk. Robot arms are used in the manufacture of each car.

Temperatures are very low most of the year, but it still gets very warm in summer. An air conditioning system has to be used to maintain a constant temperature. In addition to its normal components the system also has heating elements. A Programmable Logic Controller (PLC) uses a PID algorithm to control the air conditioning system.

1 (a) Describe, using examples from the scenario, the difference between discrete p control and continuous process control.

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(b) Describe how a PLC would use a PID algorithm to maintain a constant temperature in the air conditioning system.

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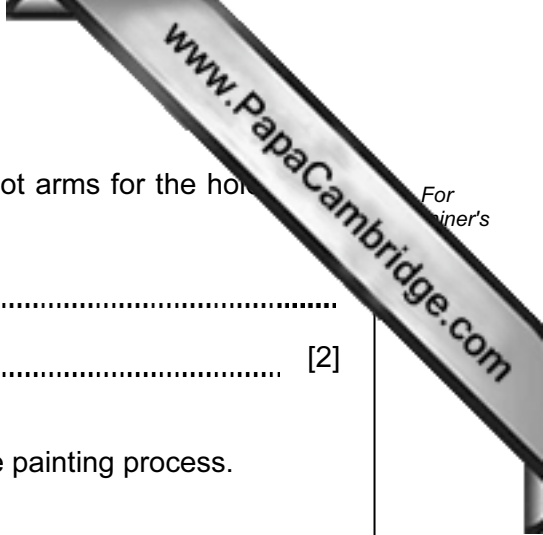
2   (a) Name **two** end effectors which would be attached to the robot arms for the hol... car body parts.

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(b) Name and describe the role of **three** end effectors used in the painting process.

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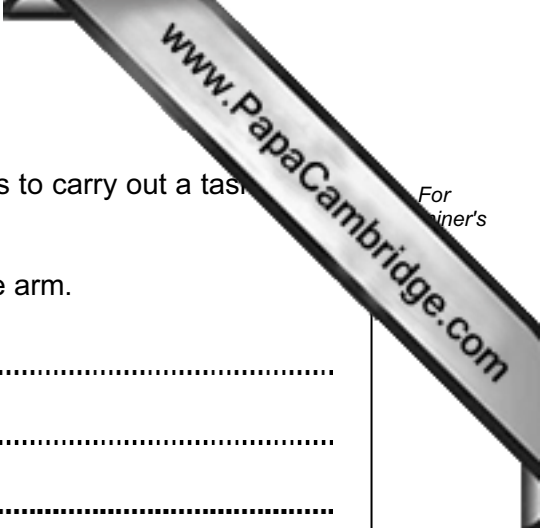...   [6]

(c) Programmers can use sensors when programming robot arms to carry out a task assembling a car.

Describe **four** of the steps to carry out the programming of the arm.

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(d) Describe **four** costs to the company of introducing robotic arms.
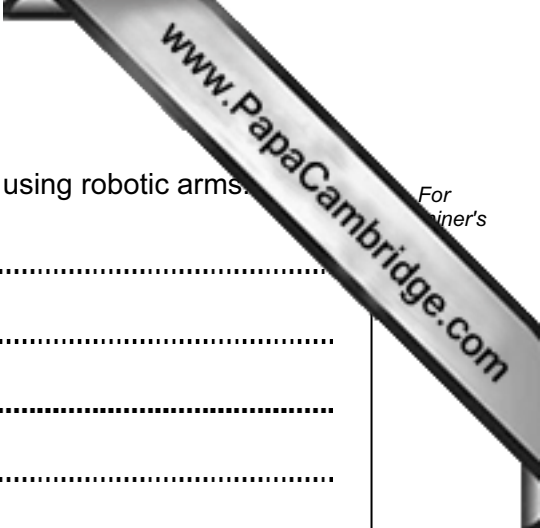
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[Turn over

For
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(e) Describe **two** benefits to the workers caused by the company using robotic arms.

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Scenario 2
Questions 3 and 4

A UK book publisher uses an out of date record keeping system for storing:

- details of the books it publishes
- the bookshops it sells them to.

The company publishes many books by a number of authors. Anneke, the managing director, wants to introduce a new system and she has employed the services of a systems analyst, Hasani, to investigate the current system and create the new one.

Hasani will use a variety of methods to collect information about the existing system before designing the new one.

It is likely that Hasani will decide to create a relational database system.

For
iner's

3 **(a)** Identify **three** methods Hasani could use to collect information when research
current system and for each method describe **one** benefit and **one** drawback.

Method 1 ....

Benefit of method 1 ....

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Drawback of method 1 ....

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Method 2 ....

Benefit of method 2 ....

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Drawback of method 2 ....

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Method 3 ....

Benefit of method 3 ....

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Drawback of method 3 ....

.... [9]

(b) Name and describe **two** types of diagram which Hasani could use to record the
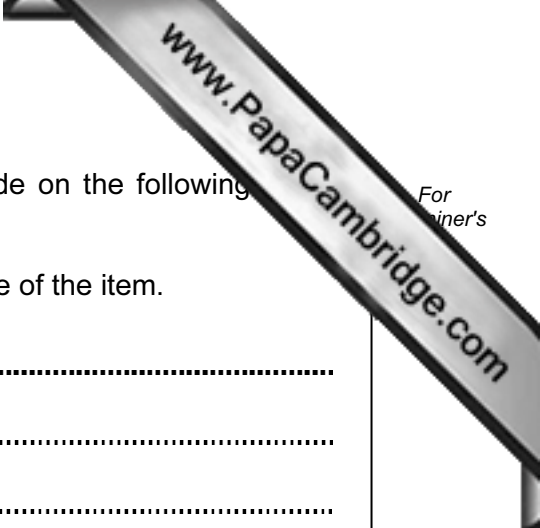information he will collect when researching the current system.

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*For
iner's*

(c) After Hasani has completed the analysis stage he will decide on the following during the design stage.

For each item, describe a factor which will influence the choice of the item.

Specifying the required hardware ....

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Designing data collection forms/screen layouts ....

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Designing validation routines ....

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Designing the required file structure ....

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[Turn over

For
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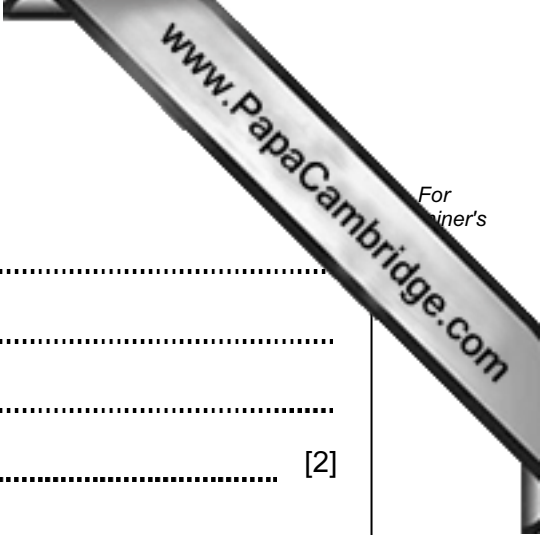
4   (a) Using this scenario describe what is meant by a key field.

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(b) Describe how the key field will be used in the creation of a relational database.

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(c) Give **three** reasons why a relational database would be better than two separate flat files.

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Scenario 3
Questions 5, 6 and 7

Middletown Bank operates a phone banking system as well as maintaining a number of branches throughout New Zealand. The bank has a call centre in Mumbai, India.

When using this system of phone banking, customers are asked to provide details of their bank account before giving three characters from their six character password. These are never the same three characters in successive logins. Phone calls are processed using Interactive Voice Response (IVR) software.

The bank is looking to further reduce costs. It is in the process of introducing an online banking system which may lead to branch closures.

Middletown is aiming to expand and offer a number of extra services to customers. It has asked an advertising company to help it advertise these. It has decided to use multimedia presentations in shopping malls to do this.

[Turn over

For
iner's

5 **(a)** Give **two** items of bank account information, other than their password, that a banking customer is asked to input using the phone.

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(b) Explain why the system asks for just three characters of the customer's password.

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(c) Describe **three** steps in the processing of a customer's request by IVR software.

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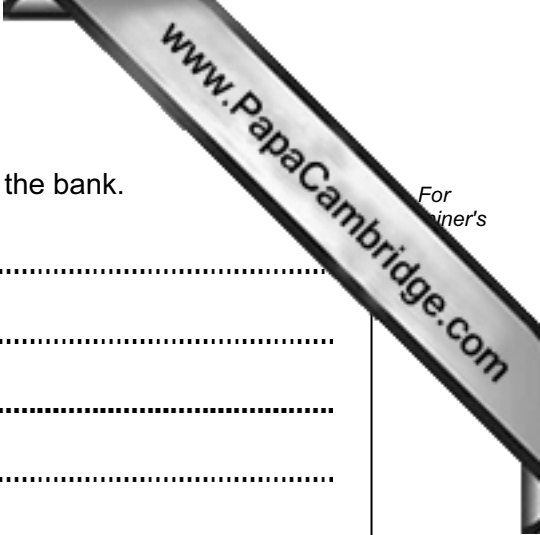**(d)** Give **two** reasons why a customer might not be satisfied with the phone service.

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[Turn over

6   (a) Describe **three** ways in which online banking will cut costs for the bank.

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(b) Describe **two** ways in which initial costs to the bank will be greater due to the introduction of online banking.
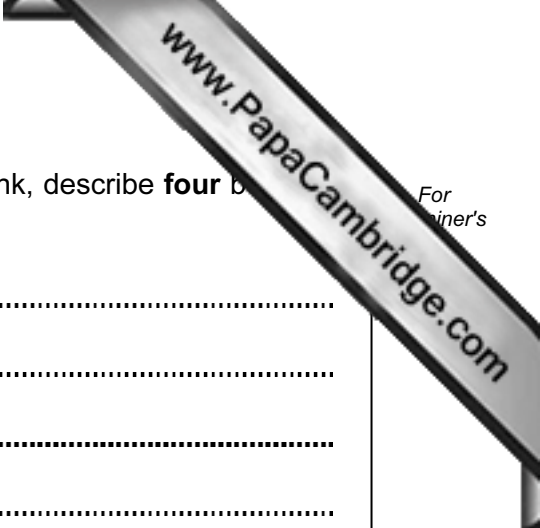
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(c) Apart from not having to travel to the local branch of their bank, describe **four** b...
to the customer of online banking.

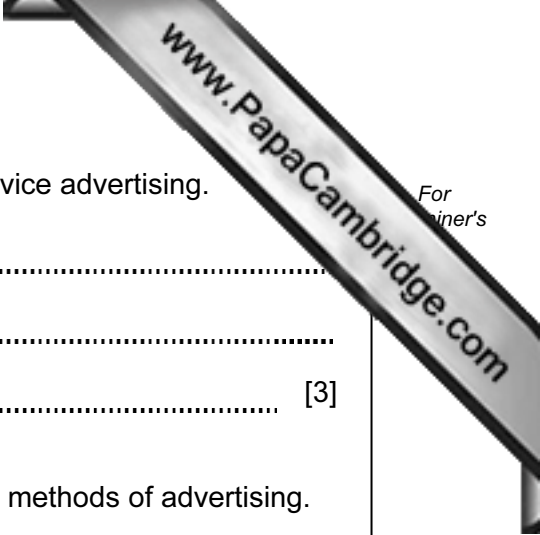1 ....

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7 (a) Identify **three** other types of organisation which would use service advertising.

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(b) Compare and contrast the use of a slide show with alternative methods of advertising.

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