



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Advanced Level

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APPLIED INFORMATION AND COMMUNICATION TECHNOLOGY

9713/12

Paper 1

October/November 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 **18** printed pages and **2** blank pages.



Scenario 1
Questions 1, 2 and 3

Jatinder is an estate agent. He works for the Downtown Realty Corporation. Part of his job is to estimate the value of houses which he helps to sell. This involves him being out of the office visiting properties. Because of this he needs to use ICT.

While he is out of the office, he uses phone conferencing to remain in contact with his colleagues.

Most of the Corporation's customers live quite close to the office. The Corporation is in competition with a number of other local estate agent companies. At the moment it advertises using locally placed posters. It is considering creating a website.

- 1 For each of the following ICT devices, describe a different purpose for which Jatinder could use it. For each device, give an advantage of this compared to non-electronic methods.

*For
Examiner's
Use*

Digital camera

Use

Advantage

Satellite Navigation system

Use

Advantage

PDA

Use

Advantage

Laptop

Use

Advantage

[8]

3 (a) There are three types of advertising; business, product and service advertising.

Name and describe a type of advertising that could be used to promote the Corporation.

Name

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Description

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..... [2]

(b) Give **three** advantages of using posters to advertise rather than the Internet.

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(c) Give **three** disadvantages of using posters rather than the Internet.

*For
Examiner's
Use*

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Scenario 2
Questions 4, 5 and 6

Maharashtra Fashions is a very large mail order catalogue company which sells a variety of clothes.

Vikram, the owner, has decided to computerise the company's operations. He has employed Fabio, a systems analyst, to supervise the process.

Fabio has completed the analysis stage. He now knows that customer orders come into the company and that invoices are produced.

To start his design he will:

- use a systems flowchart
- choose software for the new system
- design a hard copy data collection form so that data can be collected from the existing documents before transferring it to the computerised system.

He will then create a relational database.

Vikram is going to open a call centre so that customers can phone in their orders.

4 (a) Using examples from the scenario describe **four** components of a systems flowchart.

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(b) Describe **three** benefits of off-the-shelf software.

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(c) Describe **two** benefits of purpose-built software.

*For
Examiner's
Use*

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5 (a) Describe **five** features of a well designed paper-based data collection form.

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(b) Describe **three** features which could be found in a screen form but would not be found on a paper-based form.

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(c) Describe how a relational database would be created.

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For
Examiner's
Use

6 (a) Describe the use of **three** different items of ICT hardware which each telephony operator at the call centre would need.

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(b) Name and describe the **two** types of call control used with Computer Telephony Integration (CTI) software.

*For
Examiner's
Use*

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(c) There are a number of health problems which could affect the operators because of their use of computers.

*For
Examiner's
Use*

Name **four different** health problems and for each, describe a different method of prevention of the problem.

Problem 1

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Problem 2

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Problem 3

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Problem 4

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Scenario 3
Questions 7, 8 and 9

Joan is the headteacher of a school in Lagos. She wants to increase the use of ICT in testing student achievement.

She asked Safina, a systems analyst, to research the current methods of assessing students' work and to create a computer system which would help in the process.

Safina has now developed a system using a database which will store the students' test scores. As she felt that the current system was so outdated she decided to implement the system using the direct changeover method.

In the initial version, the 'student score' master file was in an unordered sequential format. The latest version stores the scores in an ordered sequential format.

As each student is tested, the scores are recorded on a transaction file.

Safina has also produced technical documentation to go with the system.

(c) Describe **four** drawbacks of using sequential files.

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(d) Explain how the transaction file must be prepared for use with the master file.

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- 8 Describe the direct changeover method of implementation, giving **two** advantages when compared with parallel running.

*For
Examiner's
Use*

Description

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Advantage 1

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Advantage 2

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..... [3]

9 (a) Give **two** reasons why **technical** documentation is needed.

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..... [2]

(b) Describe **six** items that would be included in technical documentation.

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Scenario 1
Questions 1, 2, 3 and 4

Pietr is the chief systems analyst in a major software organisation. He has recently completed research into the existing system of a company who are looking to modernise their system.

After the system has been designed and developed it will need to be implemented. Pietr has already ruled out the possibility of using direct changeover.

The programmers who work for him want to work from home. Pietr would prefer that they work in the office. However, he has given the workers the opportunity to work compressed hours.

Pietr often makes use of time management software.

Directors of the company are based at Head Office which is in a different part of town from the offices where Pietr and the programmers work.

Every week Pietr and the programmers have a meeting with the directors to explain their progress on their current project. This meeting is carried out using video-conferencing.

1 (a) Describe what is meant by 'compressed hours'.

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..... [2]

(b) Give **two** benefits to the programmers of working compressed hours.

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(c) Describe **two** benefits to Pietr of the programmers working compressed hours.

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2 (a) Describe **three** ways in which calendars used in time management software would help Pietr to organise meetings with the programmers.

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(b) Describe, in detail, **three** ways in which time management software would help Pietr to organise the workload of the programmers.

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3 (a) Describe **four** advantages to the company of using video-conferencing rather than a traditional face-to-face meeting.

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(b) Describe **four** disadvantages to the company of using video-conferencing rather than a traditional face-to-face meeting.

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..... [4]

(c) Describe pilot running and parallel running. For each method, give **one** different advantage and disadvantage compared with direct changeover.

*For
Examiner's
Use*

Pilot running

.....

Advantage

.....

Disadvantage

.....

Parallel running

.....

Advantage

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Disadvantage

..... [6]

(d) After the system has been implemented it will be evaluated.

Describe **three** steps necessary to fully evaluate the new system.

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Scenario 2
Question 5

*For
Examiner's
Use*

North China Media, based in Tianjin, owns the China Weekly magazine.

It uses the latest technology to print the magazine, including computerised plate making and typesetting techniques.

It employs a number of journalists to write articles. These journalists tend to work from home and they provide their own images to illustrate their articles. They email their material to the editor in the editor's office in Tianjin. The editor sets out each page in the magazine.

The magazine is not only printed in Tianjin but also on printing presses in a number of Chinese cities. After the magazine layout is completed it is sent for printing via the use of satellites.

5 (a) Name **three** different items of software that the editor would use, explaining how she would use them.

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(b) Describe **three** steps, in the production of the magazine, after the editor has finalised each page of the magazine.

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Scenario 3
Questions 6 and 7

Asif is the head teacher of a school in Dubai. He is keen to increase the use of ICT in lessons. A room is being set aside for use as a computer room to help the teaching of a number of subjects other than ICT.

He needs a system which will store student records.

Each student will have a unique ten digit student number.

The system will store the examination scores of each student. The maximum mark in each subject is 100.

Existing database software will be used to create this database.

Scores from the database will be included in the students' academic reports. Teachers will also be able to access individual records when needed.

He has asked Mary, one of the ICT staff, to create some validation rules so that the number of errors in the data is reduced. The database already has presence, existence and integrity checks built in. Mary has explained that further validation checks may be necessary.

6 Describe **six** ways in which teaching and learning will be helped by the use of ICT in lessons.

*For
Examiner's
Use*

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[6]

7 (a) Describe **four** features of storing data using the indexed sequential method.

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(b) Using examples, explain why the student records might need to be stored in an indexed sequential manner.

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(c) Using the examples of student number and exam scores describe **three** additional validation rules. For each rule give a different reason why it might still allow inaccurate data to be entered.

*For
Examiner's
Use*

Rule 1

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Reason 1

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Rule 2

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Reason 2

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Rule 3

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Reason 3

..... [6]

Scenario 4
Question 8*For
Examiner's
Use*

Lavender Books, a chain of bookshops, has recently opened an online shopping website.

In order to purchase books from the website, customers must first register their personal data with the company. When they purchase items they have to give their credit or debit card details.

8 (a) Describe **three** benefits to the company of the online shopping system.

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(b) Apart from security issues, describe **three** drawbacks to the customer of online shopping.

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(c) Describe, in detail, **three** methods that a hacker could use to obtain a customer's details.

*For
Examiner's
Use*

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[6]

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