



**Cambridge International Examinations**  
Cambridge International General Certificate of Secondary Education

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**INFORMATION AND COMMUNICATION TECHNOLOGY**

**0417/12**

Paper 1 Theory

**May/June 2017**

**2 hours**

Candidates answer on the Question Paper.

No Additional Materials are required.

**READ THESE INSTRUCTIONS FIRST**

Write your Centre number, candidate number and name in the spaces at the top of this page and any additional pages you use.

Write in dark blue or black pen.

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

DO **NOT** WRITE IN ANY BARCODES.

No marks will be awarded for using brand names of software packages or hardware.

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.

The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **14** printed pages and **2** blank pages.



**2**

**1** When a person buys goods in a supermarket they have to pay at the checkout.

**(a)** Identify **two** input devices used at the checkout.

1.....

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2.....

.....

[2]

**(b)** Identify **two** output devices used at the checkout.

1.....

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2.....

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[2]

**2** Tick whether the following statements are **true** or **false**.

|                                                                | <b>true</b><br>(✓) | <b>false</b><br>(✓) |
|----------------------------------------------------------------|--------------------|---------------------|
| A router is required to allow a LAN to connect to the internet |                    |                     |
| A web browser displays a web page                              |                    |                     |
| An intranet has restricted access                              |                    |                     |
| ISP means Internal Service Provider                            |                    |                     |

[2]

- 3 Tick whether the following items are found in **technical** documentation or **user** documentation or **both**.

|                       | <b>technical</b><br>(✓) | <b>user</b><br>(✓) | <b>both</b><br>(✓) |
|-----------------------|-------------------------|--------------------|--------------------|
| Error messages        |                         |                    |                    |
| Hardware requirements |                         |                    |                    |
| Program listing       |                         |                    |                    |
| Purpose of the system |                         |                    |                    |

[4]

- 4 Identify the image editing techniques described in the following statements.

- (a) Remove unwanted parts of an image.

..... [1]

- (b) Make an image larger or smaller.

..... [1]

- (c) Format the text so that it flows around an image.

..... [1]

- (d) Turn an image a number of degrees clockwise or anti-clockwise.

..... [1]

- 5** The managers of a nuclear power plant need to check the radioactivity levels in a chimney stack which needs to be demolished. They intend to use a robot. This device has sensors to read the radioactivity levels.

- (a)** Explain why the data from the sensors cannot be read directly by the microprocessor and name the device needed to change the data into a form that the microprocessor can understand.

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[3]

- (b)** The managers have been told they can use this robot for other tasks by replacing the existing sensors with different ones.

Give **three** advantages of using an existing robot device rather than developing a new one.

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[3]

- 6** A student has completed some work at school and wishes to take it home. He could use a pen drive or a CD R disc to transport the files.

- (a)** Give **two** error messages that could appear to stop him saving his work.

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[2]

(b) Compare and contrast the use of a pen drive rather than a CD R.

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[4]

7 Driverless automobiles use a number of different methods to drive between two points.

(a) Name a sensor that could be used on the automobile to detect a person walking in front of it.

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[1]

(b) Modern automobiles contain electronic devices designed to help the driver.

Suggest **three** examples of labour-saving or safety devices in a modern automobile that use sensors.

1.....

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2.....

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3.....

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[3]

(c) Discuss the advantages and disadvantages of these devices in relation to automobile journeys.

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[6]

8 Expert systems are used in medical applications.

(a) From the list below, tick **two** components of an expert system.

|                  | tick<br>(✓) |
|------------------|-------------|
| Control unit     |             |
| Graphics program |             |
| Inference engine |             |
| RFID             |             |
| Rules base       |             |
| Search engine    |             |

[2]

- (b) Describe **three** benefits of the doctor using an expert system to help diagnose a patient's illness.

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[3]

- 9 A school's examinations officer has decided to develop a database to store pupil details and the examinations they are due to sit next summer. They are going to use a relational database.

- (a) Describe the steps involved in creating the database.

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[4]

(b) Some of the records stored in the database are given below.

| Examination_ID | Name_of_subject       | Examination_level | Date_of_exam |
|----------------|-----------------------|-------------------|--------------|
| 041731         | ICT                   | IGCSE             | 12/04/2018   |
| 047822         | Computer Science      | IGCSE             | 11/06/2018   |
| 604312         | Design and Technology | O Level           | 01/06/2018   |
| 301532         | French                | O Level           | 28/06/2018   |

Based only on the examination details above, complete the table below, stating the most appropriate **data type** for each field.

| Field name        | Data type |
|-------------------|-----------|
| Examination_ID    |           |
| Name_of_subject   |           |
| Examination_level |           |
| Date_of_exam      |           |

[4]

(c) Write the search criteria to search for all examinations which will be sat after 26/06/2018, using at least one of the following operators >, >=, <, <=, = .

.....  
 ..... [2]

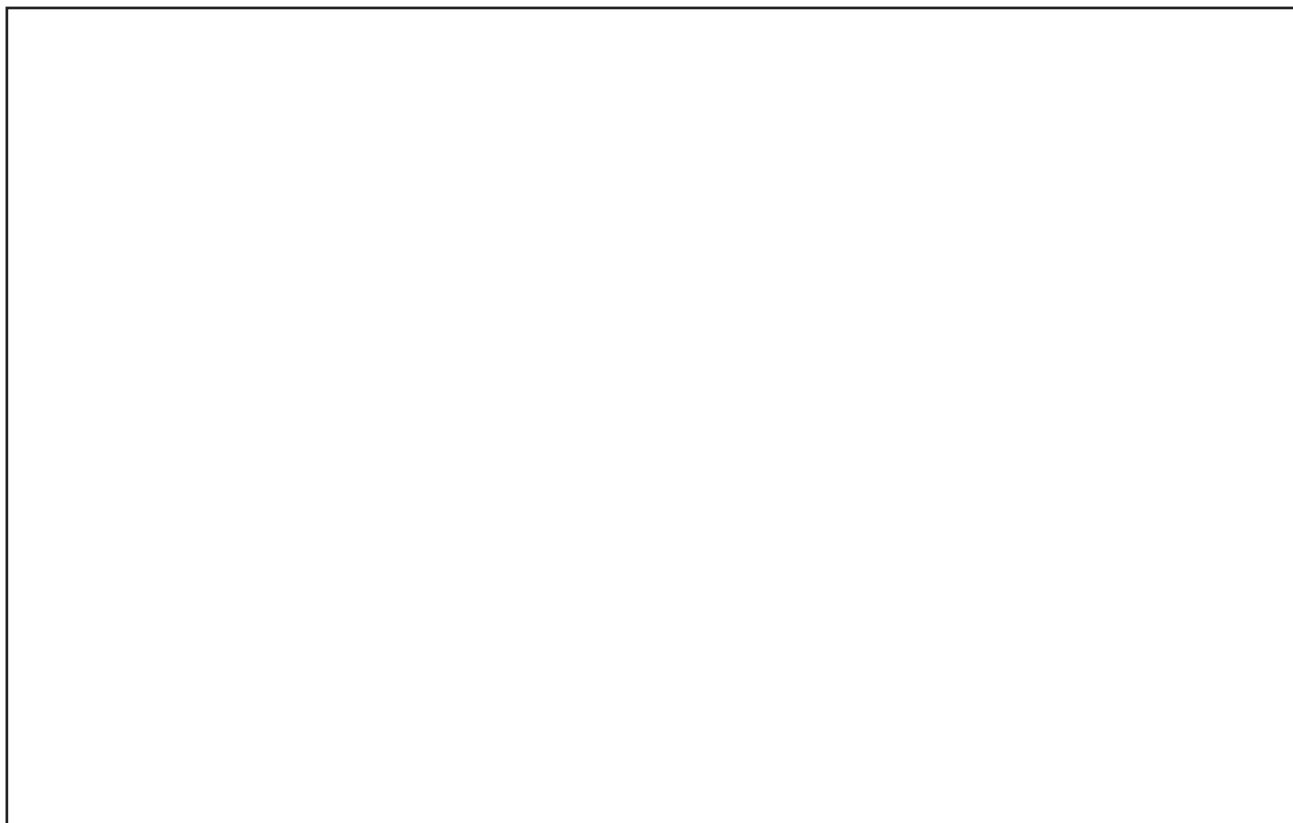
(d) Apart from presence check, name and describe a suitable validation check for each of the following fields in the database, based on the data shown in **part (b)**.

Examination\_ID.....  
 .....  
 .....  
 Date\_of\_exam.....  
 .....  
 .....

[4]

- 10** A leisure centre is creating membership cards for all its members. The membership card must include a photograph of the member, the member's name and membership number, the type of member (Senior or Junior), their date of birth and gender.

**(a)** Use the space below to design the membership card.



[5]

**(b)** Describe all the steps involved in carrying out a mail merge to create the membership cards.

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[5]

- 11 The Xtreme Adventure Holiday Company are setting up a spreadsheet for their payroll. They have job codes for each of their employees. Below is part of the payroll spreadsheet.

|    | A                                    | B                            | C               | D | E | F | G |
|----|--------------------------------------|------------------------------|-----------------|---|---|---|---|
| 1  | The Xtreme Adventure Holiday Company |                              |                 |   |   |   |   |
| 2  |                                      |                              |                 |   |   |   |   |
| 3  |                                      |                              |                 |   |   |   |   |
| 4  |                                      |                              |                 |   |   |   |   |
| 5  | Job codes                            |                              |                 |   |   |   |   |
| 6  | A                                    | Administration/Office        |                 |   |   |   |   |
| 7  | B                                    | Snowboard Instructor         |                 |   |   |   |   |
| 8  | H                                    | Host/Hostess                 |                 |   |   |   |   |
| 9  | S                                    | Ski Instructor               |                 |   |   |   |   |
| 10 | SA                                   | Senior Administrator         |                 |   |   |   |   |
| 11 | TA                                   | Transport Assistant          |                 |   |   |   |   |
| 12 | TB                                   | Trainee Snowboard Instructor |                 |   |   |   |   |
| 13 | TM                                   | Transport Manager            |                 |   |   |   |   |
| 14 | TS                                   | Trainee Ski Instructor       |                 |   |   |   |   |
| 15 |                                      |                              |                 |   |   |   |   |
| 16 | Employees                            |                              |                 |   |   |   |   |
| 17 | Name                                 | Job code                     | Job description |   |   |   |   |
| 18 | Luca Gisi                            | B                            |                 |   |   |   |   |
| 19 | Livio Stager                         | S                            |                 |   |   |   |   |
| 20 | Nico Gantert                         | B                            |                 |   |   |   |   |
| 21 | Fabian Ging                          | S                            |                 |   |   |   |   |
| 22 | Mattia Polt                          | S                            |                 |   |   |   |   |
| 23 | Sofia Walp                           | H                            |                 |   |   |   |   |
| 24 | Laura Haener                         | S                            |                 |   |   |   |   |
| 25 | Alessandro Messerli                  | S                            |                 |   |   |   |   |
| 26 | Lara Forrer                          | B                            |                 |   |   |   |   |
| 27 | Arda Hegler                          | S                            |                 |   |   |   |   |
| 28 | Simone Aebi                          | B                            |                 |   |   |   |   |

- (a) Describe, giving a suitable name for the range (A6:B14), how the payroll manager could name this range.

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[3]

(b) Write a formula for cell **C18** to display the job description, using the named range from **part (a)**.

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..... [4]

**12** When a new system is being developed analysis takes place. One method of researching the current system is interviewing.

(a) List **three** other methods of researching the current system.

1.....  
2.....  
3.....  
[3]

(b) Describe **two** drawbacks of using interviews.

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..... [4]

**13** The introduction of computers in an organisation can both increase or decrease employment.

**(a)** Tick the jobs below for which the introduction of computers will increase the number of workers.

| Job description        | tick<br>(✓) |
|------------------------|-------------|
| Car production workers |             |
| Delivery drivers       |             |
| Payroll workers        |             |
| Programmers            |             |
| Typists                |             |
| Website designers      |             |

[3]

**(b)** Describe what is meant by the following types of working.

Compressed hours.....

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Flexible hours.....

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[4]

**14** There are different ways to check the data that you have entered into a computer system. One of these ways is verification.

**(a)** Name **two** types of verification.

1.....

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2.....

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[2]

**(b)** Proofreading is sometimes thought to be verification.

Explain the differences between verification and proofreading.

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[2]

**15** Email systems can receive spam emails.

Explain why spam should be prevented.

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[2]

**16** Bluetooth and WiFi can connect devices together.

Discuss the advantages and disadvantages of using Bluetooth or WiFi.

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[8]

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