



Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

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INFORMATION AND COMMUNICATION TECHNOLOGY

0417/13

Paper 1 Theory

May/June 2017

2 hours

Candidates answer on the Question Paper.

No Additional Materials are required.

MODIFIED LANGUAGE

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.

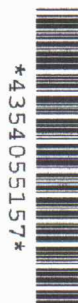
Answer **all** questions.

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 **13** printed pages and **3** blank pages.



1 Using the list, write down the most appropriate output device to produce the following.

3D printer

dot matrix printer

graph plotter

keyboard

monitor

mouse

speaker

SSD

(a) High resolution drawings in hard copy.

graph plotter [1]

(b) Sound from a computer.

Speaker [1]

(c) A solid object.

3D Printer [1]

(d) Scenes from a video game.

Monitor [1]

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

	true (✓)	false (✓)
An actuator is an item of software.		✓
Hardware is the physical components of a computer system.	✓	
Software controls the operation of the computer.	✓	
A spreadsheet is an example of systems software.		✓

[2]

3 The following icons are used on the slides in presentation software.

Write down the most appropriate meaning for each icon.

Icon	Meaning
	Home
	Next slide
	Move to last slide
	Print

[4]

4 Different terms are used in document production.

Complete the following sentences.

(a) The unit used to measure the size of a font is called

..... *point* [1]

(b) A page can be portrait or landscape. This is called

..... *Page orientation* [1]

(c) The special margin that is placed at the top or edge to clear the text from the fold in a page is called the

..... *gutter* [1]

(d) When the first line of a paragraph appears as the last line of a page this is called

..... *Orphan* [1]

5 People can manage their bank accounts in different ways. One way is telephone banking.

- (a) A person wishes to use telephone banking without speaking to an operator to transfer money from one bank account to another.

Describe the steps needed to do this.

- The user telephones the bank telephone centre.
- System asks for the log number on the credit card or customer ID or account number.
- The user taps the number on the keypad.
- The system asks for certain characters in a password.
- The user taps at the characters asked, and system verifies.
- The system gives option for the services you want.
- User specifies an transfer, and system asks for the account number to transfer to and user taps in account number.
- System asks amount to transfer, user keys in the amount.
- System asks the date to effect the transaction, user gives date and system asks the user to confirm transaction. [6]

- (b) When a debit card is read by computer, data on the card can be used for transactions.

List **four** items of data found on a debit card which can be read by computer.

1. Debit Card number.
2. Bank account number
3. Valid From
4. Expires On.

[4]

- 6 Midwest School library has a database system. Students who borrow books present their library cards containing their details. The librarian wishes to improve security by introducing biometric methods.

(a) Name two direct input methods the cards could use.

1. Magnetic Stripe
2. Bar code
- RFID

[2]

(b) Give two examples of biometric input.

1. Fingerprint
Retina Scan
2. Iris Scan
Face recognition

[2]

(c) Name and describe in detail the files the library database system would use.

- i) Books File:- This file will be used to store all data about books in the library. eg. ISBN, book name, units in stock,
- ii) Borrowers file:- Contains all the details of the student eg borrowing date, return date, Student name, Admission number
- iii) Loans File:- This acts as a link between the book and borrowers file. Contains details of type of loan, expected return date, borrowed date, type of book

[4]

- (d) The fields `date_borrowed` and `date_due_back` are contained in the database.

The `date_due_back` field is calculated from the `date_borrowed` field. The student can borrow a book for 14 days.

Write a formula for the calculated field `date_due_back`.

[date_borrowed] + 14

[2]

- 7 A school is creating a spreadsheet as a method of recording academic performance of students in IGCSE Geography.

The spreadsheet lists each student's name and their target level. The levels range from 1 to 9, where 9 is the best level.

Teachers enter the current working level. If the working level is the same or better than target level then "well done" is displayed in the comment cell, otherwise "needs improvement" is displayed.

	A	B	C	D	E	F	G
1	Name		Target Level	Working Level	Comment		
2	Peter	Smith	9	6			
3	Frances	Brown	5	7			

- (a) Write a formula for cell E2 to automatically display "needs improvement" or "well done".

E2 = IF(D2 >= C2, "Well done", "Needs improvement")

[3]

- (b) The school is going to use the data from the spreadsheet in its reports to parents. The school plans to mail merge the report with the data.

Describe **four** advantages of using mail merge.

- It is faster to prepare letters than creating and editing individual letters.
 - Fewer chance of making errors than retyping the data.
 - There is consistency in the reports.
 - It reduces the time taken to write out all the reports separately.
 - Error checking only needs to be carried out once on the data and the template.
- [4]

- (c) The teacher needs to check the data source and template before the data is merged.

Describe **three** checks that need to be done.

1. Spell check the master document.
 2. Check if merge fields are in the correct places.
 3. A check if the template and merge fields matches the house styles.
- Validate the data in the data source.
 - Check if the merge fields and template matches the house style.
- [3]

8 A club is setting up a database to store details of its members.

- (a) Complete the data dictionary of the database, adding the most appropriate data type for each field.

Field name	Data type
Membership_number	Number
Member_name	Text
Membership_fee_paid	Boolean
Telephone_number	Text
Expiry_date_of_membership	Date
Membership_fee_amount	Currency.

[4]

- (b) The club secretary wishes to find all the junior members who have paid their membership fee which would be less than \$100.

He searches for these members by typing in the following search criteria.

Membership_fee_amount < 100 AND Membership_fee_paid = "Y"

He now wishes to invite selected members to a special evening. These members will be those with a membership number over 200 as well as members whose membership expiry date is before 1 Jan 2017.

Write search criteria to list all the members that should be invited.

Membership_number > 200 OR Expiry_date_of_membership < 01/01/2017

[5]

(c) Discuss the benefits and drawbacks of storing membership details on a computer database.

Benefits

- Finding a specific record becomes very easy and faster.
- membership details can be easily edited
- The backing up process is eased out.
- Security is enhanced by use of passwords.
- There is data consistency in the records.

Drawbacks-

- It needs people with specialised skills to operate.
- They consume a lot of computer memory space.
- The software is expensive to buy and getting upgraded.
- A lot of training is needed on how to use the software which becomes very expensive and time consuming.

[6]

9 Describe the differences between ROM and RAM.

RAM

- Random Access memory
- RAM is volatile (when power goes up it loses its data)
- Can be read and written to
- It stores current instructions

ROM

- Read only memory
- ROM is non-volatile - its permanent storage.
- Can only be read
- Stores the booting up instructions

[4]

10 Using computers can cause problems for the health and safety of users.

- (a) Evaluate your own use of computers in terms of health. Include any strategies you have devised.

- i) Using computers for long hours can cause eye strain / fatigue or even headache. A strategy to counter this is to ensure that one takes regular breaks and use of antiglare screens.
- ii) Long use of computers gives back ache, neck pain. This can be countered by using ergonomic chairs and also taking regular breaks.
- iii) Typing for a long period of time or by resting wrists on the table gives repetitive strain injury (RSI). One needs a wrist rest, ergonomic keyboard and mouse to reduce this effect.

[6]

- (b) Name **three** safety issues associated with your use of computers. For each issue describe a way of minimising the risk.

1. Tripping over loose wires.
- All the cables should be under the carpet or well fastened on the wall.
2. Electrocution caused by spilt drinks or food.
- Do not drink or eat near a computer.
3. Fire from overloaded sockets.
- Use of a CO₂ fire extinguisher.
- Ensure the computer room is well ventilated.

[6]

- 11 Systems can be implemented in different ways; one of these is direct changeover.

Name **three** other methods of implementation. For each method give an advantage when compared with direct changeover.

1. Parallel changeover - It is safer than direct because there's always a fall back because in this two systems are running at the same time.
2. Phased implementation - The staff members can be trained gradually and it is phased so safer than direct.
3. Pilot changeover - With this method, it only affects one department and in case of a failure, the other branches will continue with their operations.

[6]

- 12 With the increased use of the internet, software copyright rules are being broken more often.

- (a) Explain what is meant by software copyright.

Exclusive rights given to the software owner where no one is allowed to download, copy or lease without the owner's consent.

[2]

- (b) Software piracy is one major consequence of the failure to comply with copyright rules.

Describe the ways software can be protected from piracy.

- When one buys a software, it has a unique activation code that can only be used once and on a limited number of machines.
- The use of a license agreement where the user agrees to abide by the rules.
- Use of holograms that are used to show that the software is a real copy and cannot be photocopied.
- Use of digital signature on the CD.
- Use of a dongle always.

[4]

- 13 Key-loggers are thought to be security risks but they can be used to monitor and track the use of employees on a computer system.

(a) Describe how a key-logger monitors computer usage.

- A key-logger records the key strokes of a person using the computer; it transmits back data to the supervisor who monitors what the employee has been doing.

[2]

- (b) A small minority of employees in a company have been using the computers for non-business use, so the company has had to introduce other methods of monitoring their use of ICT.

Apart from key-logging list **three** other ways that employees could be monitored in their use of ICT.

- 1 Monitoring phone call usage.
- Monitoring the emails
- 2 Monitoring the time spent on certain websites
- Monitoring the use of printers and type of work printed.
- 3 Monitoring where and when employees log in and out.
- Monitor the amount of storage space used.

[3]

- 14 Recently mobile phones have been used to pay for goods in stores and supermarkets. One method of payment involves holding the phone close to a reader in the store.

Discuss the advantages and disadvantages of this method of payment compared with other methods of credit/debit card transactions.

Advantages:

- It's easier to use and no much training is needed.
- There's no swiping of the card so less damage to the card.
- Faster method than swiping the card and inputting PIN
- There's no tracking of the data as there's no card.
- There's no hassle of remembering the card as almost everyone carries their phone.
- There's no shoulder surfing as no inputting of PIN

Disadvantages

- Older people may not have phones hence a challenge to them.
- The system needs a compatible phone.
- There may be issue with connectivity as the phone is used for transaction hence power or challenge.
- It's prone to hackers accessing the phone signals.

[8]