Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME	

CENTRE NUMBER		CANDIDATE NUMBER	

INFORMATION AND COMMUNICATION TECHNOLOGY 0417/12

Paper 1 Theory February/March 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.

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

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[Turn over

1   Complete the following sentences, using items from the list below.

a bar code reader   a chip reader   a laser printer   a magnetic ink character reader

a microphone   a PIN pad   a retina scanner   a touch pad

(a) A device that reads black and white lines on a product is called

......*A bar Code reader*...[1]

(b) A device that inputs the sound made by a human voice is called

......*a microphone*...[1]

(c) A device which is used to read the data from the bottom of bank cheques is called

......*a Magnetic ink Character reader*...[1]

(d) An input device used to input the biometric details of the eye is called

......*a retina Scanner*..[1]

2   Tick whether the following are examples of **internal memory** or **backing storage**.

	internal memory (✓)	backing storage (✓)
Random Access Memory	✓	
Portable hard disk		✓
Pen drive		✓
Magnetic tape		✓

[2]

3   Tick whether the following statements about networks are **true** or **false**.

	true (✓)	false (✓)
A hub is a central computer.		✓
A router connects a LAN to the internet.	✓	
A bridge connects a WAN to a LAN.		✓
A switch connects computers in a network.	✓	

[2]

4 The manager of a restaurant uses a database to store data about the food the restaurant uses. Part of the database is shown below.

Food_type	Packs_in_stock	Last_order_received	Re-order
Lentils	68	06/03/2017	N
Rice	54	10/03/2017	Y
Flour	19	01/02/2017	Y
Ghee	34	05/03/2017	Y

Below is a list of data types. Next to each one write down the field name which most closely matches that data type. Each answer must be different.

Date ....Last_Order_received..................

Text ....Food_type..................

Boolean ....Re-order..................

Numeric ....Packs_in_stock..................

[4]

5 Describe how security can be improved in a WiFi network.

- Enable WPA encryption while setting up network.
- Secure the wireless network with a strong password.
- Avoid broadcasting the wifi security key.
- Use wireless security software
[2]

6 Sukhjit has just discovered a large amount of spam emails in her inbox and is worried it may be a phishing attempt.

(a) Explain some other dangers of opening spam emails.

- They may contain viruses or spyware hence risky.
- They may end up filling up your mail box hence not able to access other important emails.
- If one responds to the email, the spammer knows the email is active and keeps engaging the user for personal data.

[3]

Spam is sometimes associated with phishing emails.

(b) Describe how Sukhjit would recognise a phishing email.

- The email might contain unexpected file attachments.
- It might not have real names but numbers as part of the email name.
- It might have many spellings and grammatical errors.
- It email content might be too good to be true.
- The email might be received in the Spam section.
- Confirm if the message is asking more for personal information and made urgent.

[4]

7 Explain the purpose of an intranet.

- It facilitates Communication between workers
- It makes it easier to access company specific applications as they are installed within the main server.
- They are used to regulate access to the internet.
- Access is restricted to only company employees.
- Provides high level of confidentiality as data remain within a company. [3]

8 Describe how an expert system can be used to suggest car engine fault diagnoses.

Its main components are: User Interface, Inference engine and Knowledge base.

- The user enters data into the system using an interactive user interface where questions are asked about the car engine fault.
- The user answers questions as they are being asked.
- The inference engine compares data with the data being held in the knowledge base. This is guided by a set of rules (rule base) until it finds a match.
- The system now suggests probabilities (possible solution)
- In addition, an explanation system explains how the solution was arrived at.

[5]

9 Dhanesh has accidentally downloaded a file containing a virus.

(a) Describe the possible effects on Dhanesh's computer system if he opens the file.

- The file might replicate itself and thereafter filling up the computers memory.
- The virus can corrupt all stored files or deletes them.
- It causes the computer system to slow down.

[2]

(b) Describe how Dhanesh can help prevent his computer from downloading viruses from the internet.

- He needs to install an updated anti-virus software.
- Never download software or files from untrusted websites.
- Always scan emails before opening them.
- Avoid opening of spam emails.
- Avoid downloading of files from email addresses that you do not recognise.

[3]

10 Bank cheques are sometimes used to pay bills.

(a) Name **four** pieces of information that the bank's computer may read from the bank cheque.
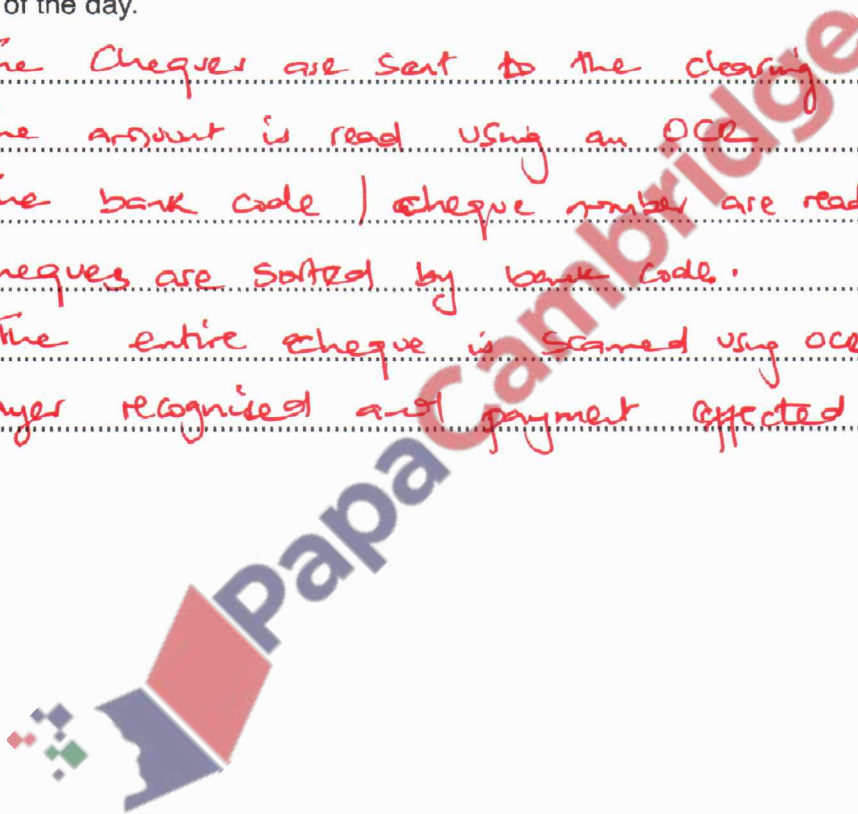
1 The Cheque number

2 Branch code

3 Amount

4 Date cheque was written
Payees names.

[4]

(b) Describe what is involved in the clearing of bank cheques which the bank has collected in the course of the day.

- The Cheques are sent to the clearing bank.
- The amount is read using an OCR
- The bank code / cheque number are read using MICR.
- Cheques are sorted by bank code.
- The entire cheque is scanned using OCR and stored.
- Payer recognised and payment effected.

[3]

11 A teacher has asked you to use a word processor to create a table of some Indian cities together with their populations. The required layout is shown below.

Columns

Populations of Indian cities				*Rows*
City	Population	City	Population
Mumbai		New Delhi	
Bangalore		Ahmedabad	
Kolkata		Chennai	

(a) Describe how you would create this table in a word processor.

- Insert a table with 4 columns and 5 rows.
- Select the entire first row and click on merge cells.
- Type in the heading 'Population of Indian Cities.
- Format the heading by highlighting it and click on bold, centre.
- Type in all the subheadings; City, Population, City, Population.
- Highlight all the sub-headings and click on italics.
- Type the cities in the respective rows/cells.
- Save your document.

.... [5]

(b) When you have completed the table the teacher asks you to add some extra cities. You will need to expand the table to add the extra cities.

Describe how you can do this.

- Right click on the last row;
- Click on insert rows (depending with the number of rows you need)
Save the document. .... [2]

12 Hot House Design require a new multimedia presentation for training sessions to be held in Hyderabad.

(a) You have been asked to design a master slide for the presentation.

The slide must include the following details:
a labelled rectangular box to represent the Hot House Design logo;
a heading: Hot House Design Training;
a subheading with the name of the venue city;
the name of the trainer – Ranjit Desai;
slide number and date of meeting.

Use the space below to design a master slide for the presentation.

[5]

(b) The trainers will need to show the presentation and produce handouts for participants. Name **three** output devices they would need.

1 Multimedia projector

2 Speakers

3 Printer
Monitor

[3]

13 A teacher wants to record the results of tests for each student in a spreadsheet. He sets test papers for both the theory (T) and practical (P) aspects of the ICT course.

Part of the spreadsheet is shown below.

	A	B	C	D	E	F	G	H	I	J	K
2											
3	Student	T	P	P	T	T	P	P	Average mark	Grade	Total theory mark
4	Rajesh Patel	23	45	44	78	34	129	124			
5											
6											
7											
8											
9											
10											
11	Max marks	50	90	90	90	100	140	130			

(a) Write down a formula you would use in cell K4 which makes use of the labels in row 3, where appropriate, to add up the marks for the theory tests only.

K4= SumiF (B$3:H$3,B$3,B4:H4 ....[4]

(b) Write down a formula that you would enter in cell I4 to calculate the average of Rajesh's results.

I4= AVERAGE(B4:H4) ....[2]

(c) Describe how the teacher could format the average mark to 2 decimal places.

- Click on the average mark.
- Select increase/decrease decimal
- Click it until you reach 2 decimal places.
- Alternatively, click on the cell, then format cell to 2 decimal places. [2]

	G	H	I	J	K	L	M	N	O
2									
3	P	P	Average mark	Grade	Total theory mark				
4	129	124	68.14					0	U
5								20	G
6								30	F
7								40	E
8								50	D
9								60	C
10								70	B
11	140	130						80	A

(d) The teacher wants the spreadsheet to calculate a student's grade automatically.
He needs to calculate this from the average mark of all the results for the student.

Write down below a formula which should be entered into cell **J4**.

It should use the calculated average mark.
It will search for Rajesh's average mark in column N and return the corresponding grade.
It should be easily replicated for other students.

J4 = VLOOKUP (I4, N4: O11, 2, TRUE) ....[4]

14 When a system has been created documentation needs to be produced.

(a) Explain why technical documentation is needed.

- It's designed to help the system analysts or programmers understand more the technical details of the system. They'll help them improve a system, able to maintain and even upgrade it. [2]

(b) Explain why user documentation is needed.

- This is for the user to be able to understand the new system and how it works.
- Helps users learn how to use the new system.
- To help users solve some minor problem without consulting. [2]

15 Part of a database report showing August temperatures in several cities in India is shown below.

Name of City	Max_temp	Min_temp
Kolkata	33	26
Chennai	34	26
Mumbai	31	26
Hyderabad	31	24
Allahabad	35	26

Describe how you would create a calculated field called temp_diff to show the difference between the maximum and minimum temperatures.

Create a textbox in the report and input the formula

[Max_temp] — [Min_temp]

....[3]

16 3D printers are being used for producing personalised prescription drugs.

(a) Give **two** advantages of using 3D printers for this purpose.

1 It's easier to change the percentages of drug in the tablet.
- Patients get the drugs quicker.
2 Tablets can be customised to individual needs.

[2]

(b) Give **two** disadvantages of using 3D printers for this purpose.

1 Initial cost of buying the printer is very high.
- Materials used are also very expensive.
2 It may be used for illegal production of drugs.

[2]

17 Email is one method of communication that uses the internet.

(a) Explain the strategies that you could use to protect yourself and your computer whilst using emails.

-Scan all emails using an updated anti-virus Software.

- Never open /download attachments from people you don't Know.

- Do not use auto-reply to emails especially on personal emails.

- When writing or responding to emails, always include a subject as people may not open emails without a subject thinking its spam.

- Always use a SPAM filter feature.

- Avoid giving personal details to people you don't know via email.

- Do not reply to emails from unknown sources.

- Use Netiquette always.

[6]

(b) When using the internet it is easy to accidently give your personal details to others.

Give two examples of personal data.
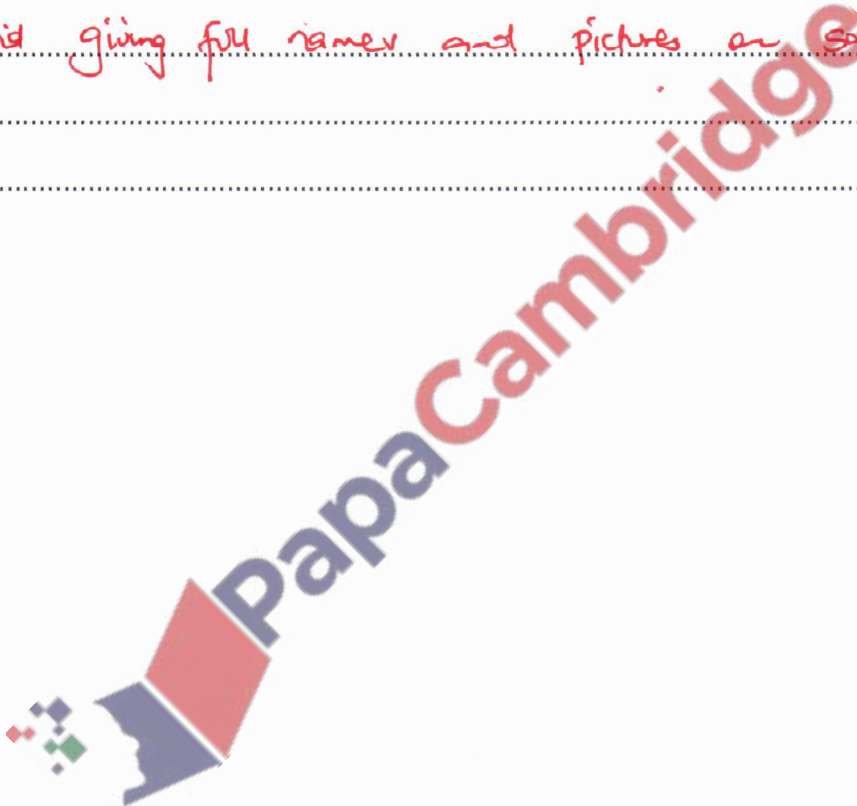
1 Phone number

Date of Birth

2 Medical history

Bank details.

[2]

(c) Describe ways of protecting your personal data when using the internet.

- Use of a strong password while accessing sites.
- Make sure you change your passwords more regularly.
- Avoid responding to emails that request for personal data.
- Use of different password for different email or sites.
- Set social media accounts as private
- Use encryption techniques / Digital certificates while sending Sensitive data.
- Avoid giving full names and pictures on social media

[5]

18 Many devices in the home can now connect directly to the internet.

Smartphones and computers used in the home can connect to the internet.

Discuss the benefits and drawbacks of using other devices that connect to the internet in the home.

Benefits
- Smart technology devices can be used to turn on devices remotely eg to warm the house during winter to find a warm house.
- The Smart washing machine can stop washing if incorrect materials have been presented.
- If one wants to watch pins on TV then one connects directly to the TV.
- Smart fridges can analyse food taken out of fridge. So that one can get a healthy diet.

Drawbacks.
- Over reliance on technology and incase of a system breakdown, then it becomes very difficult to switch to alternative.
- Prone to security threats as personal data can easily be accessed through hacking via internet connected devices.
- Incase of the controller getting lost, then the device may not work.
- Adopting this technology and the devices themselves are very expensive.
- Theres over reliance on internet connection which teads people lazy and don't think by themselves. [8]