

Cambridge  
International  
AS & A Level

**Cambridge International Examinations**  
Cambridge International Advanced Subsidiary and Advanced Level

CANDIDATE  
NAME

--

CENTRE  
NUMBER

--	--	--	--	--

CANDIDATE  
NUMBER

--	--	--	--



**INFORMATION TECHNOLOGY**

**9626/12**

Paper 1 Theory

**October/November 2017**

**1 hour 45 minutes**

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.

Write in dark blue or black pen.

You may use an HB pencil for any diagrams, graphs or rough working.

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

**DO NOT WRITE IN ANY BARCODES.**

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.

Any businesses described in this paper are entirely fictitious.

This document consists of **16** printed pages.

1 (a) Tick the **most accurate** statement about the use of a compiler.

	✓
A compiler executes a high-level program one statement at a time before translating the next statement.	
A compiler converts object code into source code.	
A compiler translates machine code into a high-level language program.	
A compiler often produces a separate object code program.	

[1]

(b) Tick the **most accurate** statement about the use of a linker.

	✓
A linker executes a high-level program one statement at a time before translating the next statement.	
A linker takes one or more source code files and combines them into a single executable file.	
A linker takes one or more object files and combines them into a single executable file.	
A linker is used in conjunction with an interpreter.	

[1]

- 2 Many schools want IT departments to introduce lessons emphasising aspects of e-safety.

Tick **four** of the following statements which offer good advice.

	✓
It is alright to send an email to a person you do not know as it does not matter if they find out your email address.	
You should always attach a photograph of yourself to an email so they know who you are.	
You should only use websites recommended by teachers.	
It is acceptable to post a photograph of your school on a social media site as so many students go there.	
You should always think twice before opening an email from an unknown person as it might be spam.	
It is okay, for the first time, to meet a person you only know from the internet on your own.	
You should know how to block and report unwanted users from social media sites.	
It is acceptable, if you trust them, to give someone you have only met on the internet your name and address.	
When using instant messaging it is okay to use bad language if you are among friends.	
When playing games on the internet you should never use your real name.	

[4]

**3** A health inspector, Josefina, is investigating the health of students. She wishes to study the effect on them of traffic on roads passing close to the school. One road seems to be causing more problems than others. She is going to collect data regarding the amount of traffic and its effect on their health.

**(a)** Describe, with specific reference to the investigation, how she could gather data from direct data sources.

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
..... [6]



The school's students have collected data about cars for a maths project. The teacher has decided to code the data. Here is some of the data. The codes he will use are in brackets.

Colour	Make	Male or female driver	Approximate age of driver
Light blue (B)	Frod (F)	Male (M)	50–59 (50)
Green (G)	Olep (O)	Female (F)	30–39 (30)
Dark blue (B)	Vagen (V)	Female (F)	20–29 (20)

(d) Give **three** reasons why the teacher is planning to code the data.

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

(e) Give **three** reasons why the IT teacher has warned against some of the coding the maths teacher plans to use.

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

- 4 Jasvinder has just become manager of the ticketing department in an airport. Part of her job is to provide tickets for passengers who have decided to fly at the last minute. She uses computers to produce the tickets. She also has to produce hard copy of the details of every flight, including passenger names, prior to each flight.

Evaluate the output devices which Jasvinder might use, including their specific use in this system.

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
..... [8]

- 5 Below is an extract from a spreadsheet showing details of one day's train journeys between London and Paris. A hyphen, '-', in a cell indicates that the train does not stop at that station.

	I	J	K	L	M	N
2		<b>LONDON</b> St Pancras Intl	EBBSFLEET International	ASHFORD International	<b>PARIS</b> Gare du Nord	Train No.
3		05:40	05:58	06:24	09:17	9080
4		06:18	-	06:55	09:47	9002
5		07:01	-	-	10:17	9004
6		07:55	08:12	-	11:17	9008
7		08:19	08:38	-	11:47	9010
8		09:17	09:34	09:55	12:47	9014
9		10:01	-	-	13:17	9016
10		10:24	10:42	-	13:47	9018
11		11:01	-	-	14:17	9020
12		11:31	-	-	14:47	9022
13		12:01	-	-	15:17	9060
14		12:24	12:42	-	15:47	9024
15		13:31	-	-	16:47	9028
16		14:01	-	-	17:17	9030
17		14:31	-	-	17:47	9032
18		15:31	-	-	18:47	9036
19		16:01	-	-	19:17	9038
20		16:22	-	16:55	19:47	9040
21						
22			Number of non-stop trains		10	

Michelle, the train controller in London, wants to use this spreadsheet to count the number of trains that do not stop at any station between London and Paris.

- (a) Write down the formula which should go in cell M22 to give her this information.

= .....

..... [6]

You can use the space below for any working you need.



(b) Describe the steps that Michelle would need to carry out if she wanted to print out the *Train No.* of the trains that do not stop at any station between London and Paris.

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [5]



7 A number of airline companies train their pilots using flight simulators.

Evaluate the use of simulation in this application.

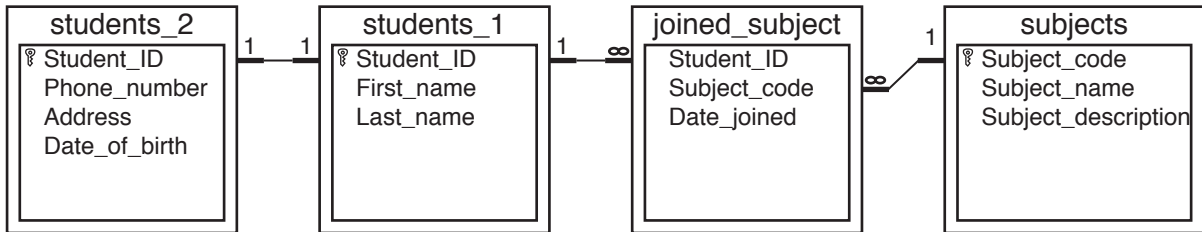
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....

..... [8]

8 A college keeps records of its A Level students and the subjects they study in a database. It has the following tables:

- Students' names
- Students' other personal data
- Details of when they started studying the subject
- All the possible subjects which can be taken by A Level students.

These tables are linked as shown below.



Using examples from the tables shown above or otherwise:

(a) Describe the three relationships:

(i) one-to-one

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

(ii) one-to-many

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

(iii) many-to-many

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
..... [4]

(b) Define 'referential integrity' and explain why it is so important.

.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
..... [4]

9 Siegfried has created a word processed document using 'proprietary software'. Simon has suggested that he should save it in an 'open-source file format'.

(a) Describe what is meant by 'proprietary software'.

.....  
.....  
.....  
.....  
.....  
.....  
..... [3]

(b) Describe what is meant by an 'open-source file format'.

.....  
.....  
.....  
.....  
.....  
..... [3]

10 Chow uses sound editing software to vary the sampling rate in an audio file.

Describe what is meant by sampling and how the sampling rate affects audio file sizes.

.....

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

