CANDIDATE NAME	

CENTRE NUMBER		CANDIDATE NUMBER	

INFORMATION TECHNOLOGY 9626/12

Paper 1 Theory May/June 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.

CAMBRIDGE
International Examinations

[Turn over

1   Tick the **four** most accurate statements regarding LANs and WANs.

	✓
A WAN is a Wireless Area Network.	
A LAN is a Live Area Network.	
A LAN covers a smaller geographical area than a WAN.	
A WAN has a higher data transfer rate than a LAN.	
Unlike a LAN, the signal does not deteriorate in a WAN.	
A LAN does not need a router to connect computers together.	
A WAN experiences more data transmission errors than a LAN.	
A WAN has a lower bandwidth than a LAN.	
The internet is an example of a LAN.	
A WAN is more secure than a LAN.	

[4]

2   Tick the **four** statements which are true about the use of expert systems.

	✓
A knowledge base is a key component of an expert system.	
Experts do not need to make a judgement; they just accept the results of the expert system.	
The user interface is used for both input and output.	
The rules base can contain IF… THEN statements.	
The inference engine searches the user interface to find possible solutions.	
An expert system is often used in car driving simulators.	
An expert system is not as accurate as a single expert would be.	
A knowledge engineer is employed to create an expert system.	
An expert system never needs updating.	
Expert systems always come up with exact solutions.	

[4]

3 A newspaper story is regarded as static data.

Using another appropriate example, describe what is meant by static data.

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4 Ashraf has used a word processor to type up an essay for his history assignment. He wishes to make sure that there are no errors in the text he has written.

Describe how he could proofread his essay.

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5   A school secretary has just been given some student data to enter into a school's database of student records.
These include student numbers and dates of birth such as:

    13542767   14/07/2000
    11987643   13/10/2001

In order to ensure accuracy of the input, the data will be validated.
Possible validation checks which could be used are range checks, check digits and format checks.

Analyse the effectiveness of these checks in validating this data.

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6 High-level languages can be translated using a compiler or an interpreter.

(a) Describe the features of a compiler.

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(b) Describe the features of an interpreter.

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7 A school has a computerised weather station which monitors a number of atmospheric conditions or variables.

Describe how data is collected, processed and displayed using such a system.

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8 Li is very concerned that one day he could be a victim of a scam to take money from his bank account. He is particularly worried about smishing and pharming.

Describe what is meant by

(a) smishing.

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(b) pharming.

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9 A recent BBC news bulletin claimed:

The digital divide, like many other economic or social problems, is a global issue.

Explain what is meant by the digital divide.

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10 Here is a table of data about individuals and their families which is being converted into a database.

Family_name	First_name	C	D	E	F
Gustoffsson	Gunnar	18/05/1957	M	Divorced	2
Sandhu	Jasvinder	09/08/1988	F	Single	0
Otieno	Peter	27/12/2001	M	Single	0
Qabbani	Nizar	01/01/1990	M	Married	3
Wanjeku	Jane	22/05/1994	F	Married	4
Garcia	Francesca	12/11/1986	F	Married	5
Potter	James	17/10/1992	M	Married	0

Suggest suitable field names for C, D, E and F. For each field, state an appropriate data type and give a reason for your choice. For each field, state, with a reason, the number of bytes the database would need to allocate for the data to be stored.
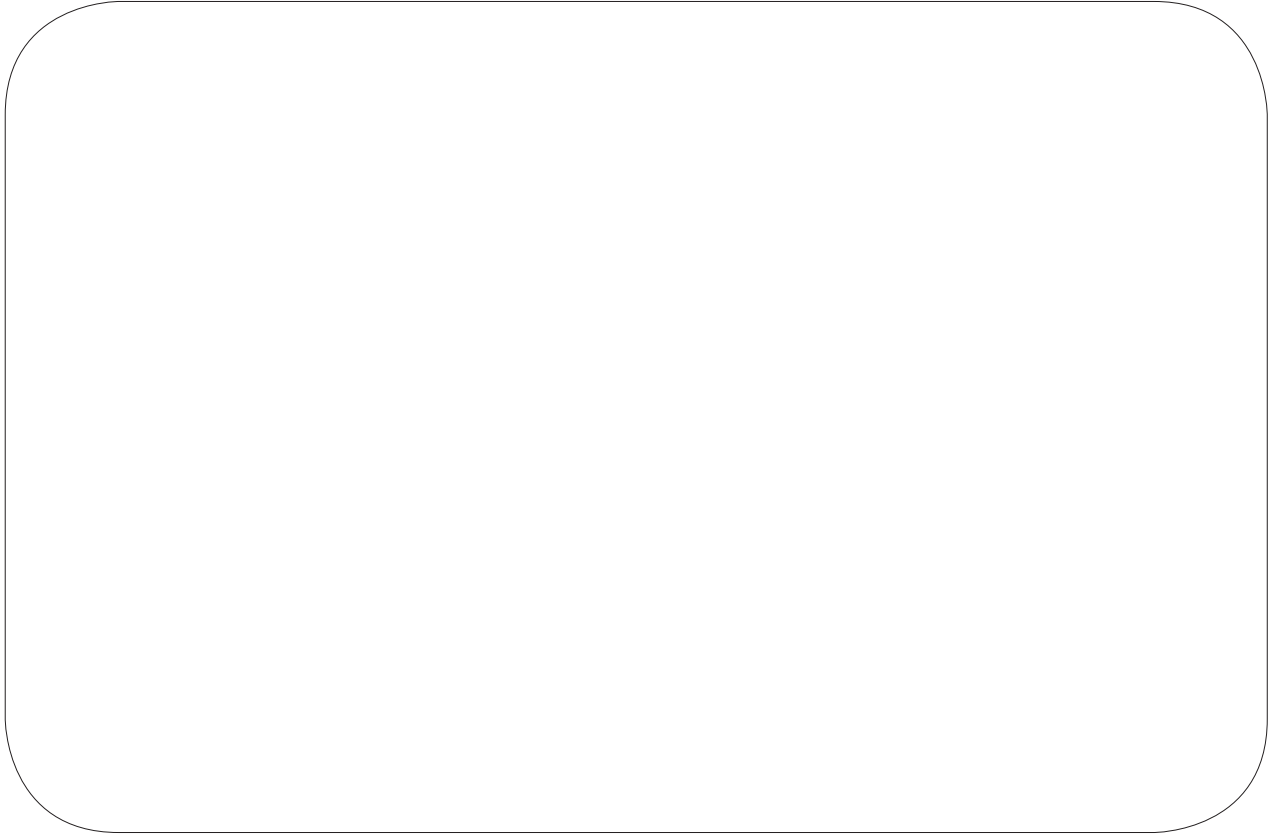
(i) C ....

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(ii) D ....

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(iii) E ....

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(iv) F ....

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11   Rajvinder and his team of car designers are producing designs for a new model. Their office is on the other side of town from the company's head office. Every month, Rajvinder and the designers report to the company directors by means of a web conference.

Describe how Rajvinder would set up this web conference, assuming that he is using a third party to supply the service and that he has checked that all the hardware and software is working.

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12 Dudley Nuclear Fuels (DNF) creates and operates nuclear reactors. They often create models of reactors before building them in real life.

Discuss the benefits and drawbacks to DNF of using models.

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13

Above is a pie chart showing the proportion of students following different courses at a school. In its present form it is not providing any information.

Describe, using examples related to this scenario, how you would improve this chart so that it did provide information which could be used by the head teacher of the school.

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14 Imran has developed a simple library database system which contains information about the books. Each record contains the following data:
Book title, author, ISBN, borrowed (Y/N), date borrowed, borrower number.

Design an appropriate online data entry form for one book, clearly indicating the amount of space required for each field. Your design must represent a computer screen and, where appropriate, allow the user to enter data by clicking the mouse rather than entering text.

[8]

15 Frida has been given the task of creating a database to store all her company's customer records and sales records. She is going to produce a relational database.

The customer records will have the fields **Customer_id**, **Name**, **Contact_phone** and **Card_number**.

The sales records will have the fields **Invoice_number**, **Item_number**, **Item_description**, **Item_cost** and **Customer_ref**.

(a) Complete the diagram below to show how the tables will be combined.
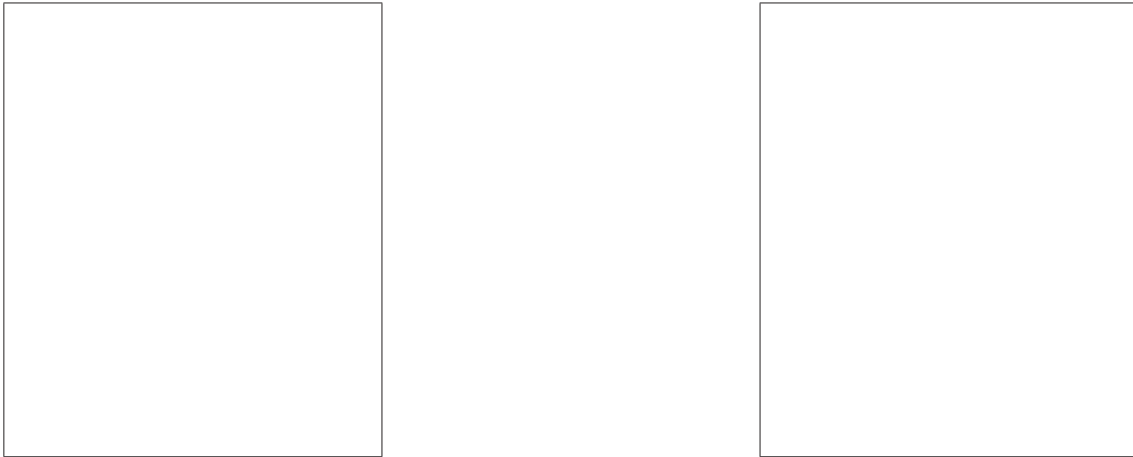
[4]

(b) Describe how you would create the relational database in part **(a)**.

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