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Cambridge International AS & A Level

Cambridge International Examinations
Cambridge International Advanced Subsidiary and Advanced Level

CANDIDATE NAME

CENTRE NUMBER | | | | | |

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5954540207

INFORMATION TECHNOLOGY **9626/12**

Paper 1 Theory **October/November 2018**

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.

Calculators must not be used on this paper.

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 **14** printed pages and **2** blank pages.

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1 Tick the **four** most accurate statements regarding validation and verification.

	✓
Verifying data is checking that data is correct.	
Validating data is checking that data is correct.	
Validation is the process of checking that the data entered into a system is the same as the source data.	
Visual verification is a type of verification.	
A range check is an example of verification.	
Validation is checking that data is sensible.	
A range check is the best check to make sure transposition has not occurred when typing in a bar code.	
Visual validation is a type of validation.	
Double data entry is a type of verification.	
A type check will prevent a letter of the alphabet being typed into a numeric field.	

[4]

2 Tick the **four** most accurate statements regarding input and output.

	✓
A scanner can be both an input and output device.	
A touch screen can be both an input and output device.	
Input devices allow the user to communicate with the computer's operating system.	
Output devices allow data to be stored electronically for future use.	
Inputs must be converted to analogue data before they can be processed by the computer.	
All inputs always come in the form of digital data.	
A plotter is an output device.	
Outputs always come in the form of a printout.	
A microphone is an input device.	
A pen drive is an input device.	

[4]

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3 One of the dangers of accessing the internet is the increased risk of malware attacks.

Describe the distinctive features of each of the following types of malware.

Trojan Horse .....

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Worm .....

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Spyware .....

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Adware .....

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4 **(a)** Describe the advantages of using a web authoring package to create a web page rather than writing HTML code.

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(b) Describe the disadvantages of using a web authoring package to create a web page rather than writing HTML code.

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5 Spreadsheet software enables users to make use of formulas and functions.

Using examples, compare and contrast a formula and a function.

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6 Aeroplane manufacturers often use computer models to trial new aircraft.

Describe **four** benefits of using a model to create and run simulations.

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7 There are a number of communication technologies and their associated networks used for transmitting data.

Describe the following types including their suitability, with reasons, for use in a video-conference.

(a) ADSL

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(b) SDSL

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(c) ISDN

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8 A secretary has been given a list of product details. She was asked to type the details into a spreadsheet. Unfortunately, when she typed them in, wrong data was entered into cells A7, A10, A16 and B10.

List secretary was given

Product number	Department code
38366614481	B167
14533707617	B132
92648277616	C185
83028907250	A675
99028485231	D132
77662318299	B453
11997211500	E342
71458052066	D543
81391876632	E723
13917086392	Z418
45608392059	M329
54445757756	B132
14050284074	A675
30965517520	E647
43270336250	F341
97118134256	C231

Spreadsheet produced by secretary

	A	B	C	D
1	Product number	Department code		Price
2	38366614481	B167		$383.00
3	14533707617	B132		$145.00
4	92648277616	C185		$926.00
5	83028907250	A675		$830.00
6	99028485231	D132		$990.00
7	76762318299	B453		$767.00
8	11997211500	E342		$119.00
9	71458052066	D543		$714.00
10	8118xy76632	ET23		$811.00
11	13917086392	Z418		$139.00
12	45608392059	M329		$456.00
13	54445757756	B132		$544.00
14	14050284074	A675		$140.00
15	30965517520	E647		$309.00
16	3270336250	F341		$327.00
17	97118134256	C231		$971.00
18				

(a) Describe **four** validation checks which could have prevented these errors from occurring, including a description of how they would have prevented the errors.

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(b) The secretary's manager typed a formula into cell D2 to calculate the price of the product which is given at the beginning of each Product number.

Write down the formula which he would have entered in cell D2 and describe how the Price was formatted so that it would appear as it does in the spreadsheet.

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You may use this space for working out.

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9 People who are employed to develop software often refer to the need for a detailed data dictionary.

Describe the components of a typical data dictionary.

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10 A company provides cars for several leasing organisations in districts of London, in the UK, such as Enfield or Lewisham.
Agents buy cars from a number of showrooms.
The company buys a car from an agent before then providing it for lease.

The holding company needs to keep a record of:

- each car
- which agent bought each car
- which showroom it came from.

An example of a database for this company in unnormalised (0NF) form is shown below.

Car ID	**Make**	**Model**	**Agent ID**	**Showroom**	**Agent Name**	**Agent Email**
LO01	Lopa	Wolf	001	Jones, Enfield	John Hart	jhart@welovecars.com
FO01	Frod	Squire	002	Morgan, Lewisham	Carl Mason	cmason@amazingcars.com
YA01	Yayota	Badger	003	Jones, Greenwich	Joe Smith	jsmith@mew.com
CN01	CNX	Rabbit	001	Lewis, Ealing	John Hart	jhart@welovecars.com
WX01	WX	Gull	001	Jones, Brent	John Hart	jhart@welovecars.com
YA02	Yayota	Loaf	002	Evans, Lambeth	Carl Mason	cmason@amazingcars.com
FO02	Frod	Peer	003	Evans, Lambeth	Joe Smith	jsmith@mew.com
LO02	Lopa	Fox	001	Jones, Enfield	John Hart	jhart@welovecars.com
YA03	Yayota	Plum	001	Morgan, Lewisham	John Hart	jhart@welovecars.com
CN02	CNX	Chariot	003	Lewis, Ealing	Joe Smith	jsmith@mew.com

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(a) Convert this database to third normalised form by completing the field names for each table provided.
You are **not** required to enter any data into the tables.

Cars

Field1	Field2	Field3	Field4	Field5

Agents

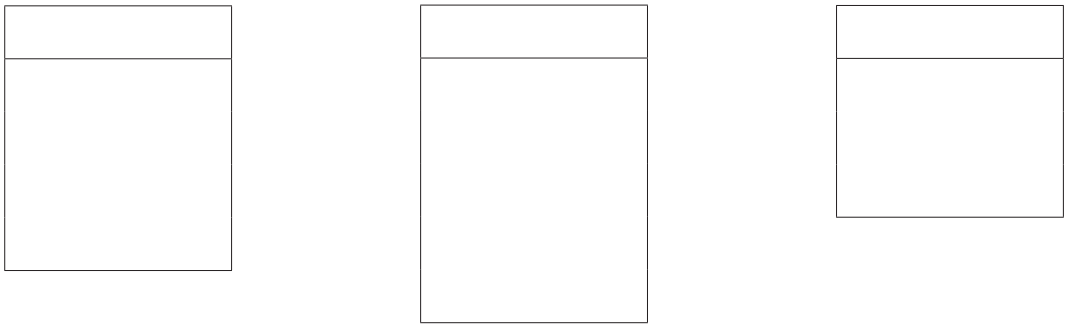
Field1	Field2	Field3	Field4

Showrooms

Field1	Field2	Field3

[10]

(b) Complete the relationship diagram below by completing the tables and showing the **types** of relationships between them.
In the top cell write the name of the table and write the field names underneath.
Indicate the primary key (pk) for each table and any foreign keys (fk).



[8]

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[Turn over

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11 A number of items of computer hardware are used for storing data.

Evaluate the use of RAM, ROM and hard disks for this purpose.

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12 A company is planning a new computer network and is faced with choosing between a peer-to-peer and a client-server network.

Discuss the advantages and disadvantages of a peer-to-peer network compared with a client-server network.

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