Cambridge IGCSE™

CANDIDATE NAME	

CENTRE NUMBER						CANDIDATE NUMBER				

INFORMATION AND COMMUNICATION TECHNOLOGY **0417/12**

Paper 1 Theory **October/November 2020**

2 hours

You must answer on the question paper.

No additional materials are needed.

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- You may use an HB pencil for any diagrams, graphs or rough working.

INFORMATION

- The total mark for this paper is 100.
- The number of marks for each question or part question is shown in brackets [ ].
- No marks will be awarded for using brand names of software packages or hardware.

This document has **16** pages. Blank pages are indicated.

1 Complete the question using an appropriate item from the list given.

Bar code reader   Blu-ray drive   DVD drive   Hard Disk Drive   Keyboard

Memory stick   Mouse   Optical Character Reader   SSD   TFT monitor

(a) Identify **two** solid state storage devices from the list.

1 ....

2 ....
[2]

(b) Identify **two** direct data entry devices from the list.

1 ....

2 ....
[2]

2 A website can have three web development layers.

Tick (✓) whether the following statements refer to the **behaviour** layer, **content** layer or **presentation** layer.

	behaviour (✓)	content (✓)	presentation (✓)
This layer is used to display and format elements within the web page			
This layer includes the hyperlinks to navigate around the website			
This layer is used to enter scripting language to elements within a web page			
This layer is used to create the structure of a web page			

[4]

3 A computer system consists of a number of different items of hardware.

Write down the most appropriate item of hardware that fits the following descriptions.

(a) A non-volatile device that stores the start-up commands.

.... [1]

(b) A printer that produces physical objects.

.... [1]

(c) A hardware device that reads analogue data from the environment.

.... [1]

4 The temperature in a glasshouse is controlled by a computer. A program is being designed to open and close the glasshouse windows. If the temperature is too hot, then the windows will open; otherwise the windows will close.

The systems analyst has produced a number of different instructions to show how the system works. Part of the instructions are shown.

(a) Complete the instructions by writing the most appropriate technical terms to explain how the windows are operated.

- Data is read by the sensor.

- .... data is output from the sensor.

- Data from the sensor is sent to the microprocessor via the ....

  ....

- If the temperature is greater than the ....

- The microprocessor sends a signal to the ....
[4]

(b) Circle the **two** most appropriate input devices associated with the computerised glasshouse.

Chip and PIN reader   Hard Disk Drive   Laser printer

LED monitor   Moisture sensor   Numeric keypad
[2]

(c) Another use of computer control is in the manufacture of cars.

Discuss the benefits and drawbacks of using computer-controlled systems rather than humans to build a car.

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.... [6]

5 **(a)** Compare and contrast an intranet with the internet.

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.... [8]

(b) Protocols are associated with the internet and an intranet.

Identify **three** protocols and for each one, identify a use.

Protocol 1 ....

Use ....

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Protocol 2 ....

Use ....

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Protocol 3 ....

Use ....

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[6]

6 Khalid keeps a spreadsheet to record his expenses and to plan for future spending. This spreadsheet is split into two separate sheets, which he has named Plan and Model.

Plan contains details of his future spending.
Model contains a model of his income and expenses.

Plan

	A	B	C	D
1	*Income Statement*		% of spending	% of income
2	Income	63,784		
3				
4	Expenditure items			
5	Taxes	12,757	22.22%	20%
6	Housing	19,135	33.33%	30%
7	Food	6,378	11.11%	10%
8	Transportation	9,568	16.67%	15%
9	Entertainment / Other	6,378	11.11%	10%
10	Healthcare	3,189	5.56%	5%
11				
12	Investment return	4%		
13	Income Growth	2.5%		
14	Expense Ratio %	90%		
15				

Model

	A	B	C	D	E	F	G
1	**Model**						
2		2020	2021	2022	2023	2024	2025
3							
4	Income	63,784	65,379	67,013	68,688	70,406	72,166
5	Investment Income		255	527	816	1,123	1,450
6	Total Income	63,784	65,634	67,540	69,504	71,529	73,616
7							
8	Taxes	12,757	13,076	13,403	13,738	14,081	14,433
9	Housing	19,135	19,614	20,104	20,607	21,122	21,650
10	Food	6,378	6,538	6,701	6,869	7,041	7,217
11	Transportation	9,568	9,807	10,052	10,303	10,561	10,825
12	Entertainment / Other	6,378	6,538	6,701	6,869	7,041	7,217
13	Healthcare	3,189	3,269	3,351	3,434	3,520	3,608
14	Total Expenses	57,405	58,842	60,312	61,820	63,366	64,950
15							
16	Net Income (Savings)	6,379	6,792	7,228	7,684	8,163	8,666
17							
18							
19	Balance Sheet						
20	Savings	6,379	13,171	20,399	28,083	36,246	44,912
21	Can I afford a car?	N	N	N	N	Y	Y
22							

(a) Khalid has entered a formula in cell C4 of the Model sheet. The formula is B4+(B4*Plan!$B13)

Explain, in detail, what the formula does. Include in your answer an explanation of why the $ and the ! are used in the formula.

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.... [5]

(b) He is saving up to buy a new car; this will cost at least $35,000.

Khalid has entered a formula in cell B21 of the Model sheet. The formula is IF(B20>35000,"Y","N")

Explain, in detail, what the formula does.

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.... [3]

Plan

	A	B	C	D	
1	*Income Statement*		% of spending	% of income	
2	Income	63,784			
3					
4	Expenditure items				
5	Taxes	12,757	22.22%	20%	
6	Housing	19,135	33.33%	30%	
7	Food	6,378	11.11%	10%	
8	Transportation	9,568	16.67%	15%	
9	Entertainment / Other	6,378	11.11%	10%	
10	Healthcare	3,189	5.56%	5%	
11					
12	Investment return	4%			
13	Income Growth	2.5%			
14	Expense Ratio %	90%			
15					

(c) Khalid is planning to create an appropriate graph/chart to be placed in a new sheet. The graph/chart will display the % of income and the names of the expenditure items from the Plan sheet.

Identify the most appropriate graph/chart he could use and describe the steps he needs to take to produce this graph/chart in a new sheet.

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.... [7]

Question 7 starts on page 10.

[Turn over

7 The owner of a soccer club has employed a systems analyst to create a new computerised system to store details of club members.

The systems analyst starts by researching the existing system. One way he could do this is to interview members of the soccer club.

(a) Discuss the benefits and drawbacks of individually interviewing the members.

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.... [6]

(b) When the systems analyst created the new system, he had to choose data types for each field.

Write down the most appropriate data type for each field. The answers in the table must be different in each case. The data type for one field has already been identified; this data type must not be used for the other fields.

For any numeric field specify the type of number.

Field name	Data type	Example data
Year_joined		2019
Gender		F
Date_of_birth		04/11/2000
Membership_number	*Text*	01254
Cost_of_membership		$10.50

[4]

(c) The systems analyst has set the data type for the Membership_number field as text.

Explain why this field has been set for a text data type rather than a numeric data type.

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.... [2]

(d) The owner of the soccer club is planning to create membership cards for all its members using mail merge. The membership card will include personal data from the new system.

Describe the steps required to perform the mail merge.

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.... [6]

8 Many supermarkets now use the internet and allow customers to buy their products online.

(a) Explain, in detail, the effects that online shopping has had on supermarkets.

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.... [4]

(b) When customers shop online, they can pay using a debit card.

Describe measures that customers could use to reduce fraud when using a debit card online.

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.... [5]

(c) Smishing, pharming and phishing are three security threats that can occur when using the internet for shopping.

Tick (✓) whether the following statements refer to **pharming**, **phishing** or **smishing**.

	pharming (✓)	phishing (✓)	smishing (✓)
Fake emails are sent to target users			
When the user types in a URL they are directed to a fake website			
Malicious code is installed on the user's computer			
Fake text messages are sent to the user's phone			

[4]

9 When software is bought, the purchaser is subject to copyright legislation.

Give **four** actions that would breach copyright legislation.

1 ....

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2 ....

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3 ....

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4 ....

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[4]

10 Define the following internet terms.

(a) Hyperlink ....

....

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.... [2]

(b) ISP ....

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.... [2]

11 For each of the following pieces of hardware, explain the strategies you would use to help minimise health problems.

(a) Monitor ....

....

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.... [3]

(b) Keyboard ....

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.... [2]

12 Describe the differences between using a Graphical User Interface (GUI) and a Command Line Interface (CLI).

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