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INFORMATION AND COMMUNICATION TECHNOLOGY

0417/11

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.

- | | | | | |
|--------------------|---------------------|-----------------|-----------|---------------|
| Blu-ray disc drive | DVD RAM drive | Hard disk drive | Keyboard | Laser printer |
| LCD monitor | Magnetic tape drive | Mouse | Pen drive | SSD |

(a) Identify **two** output devices from the list.

1

2 [2]

(b) Identify **two** optical storage devices from the list.

1

2 [2]

2 The Central Processing Unit consists of three components.

Tick (✓) whether the following statements refer to the ALU, the Control unit or the Main memory.

	ALU (✓)	Control unit (✓)	Main memory (✓)
This is the immediate access storage			
This carries out the calculations			
This carries out logical decisions			
This directs the input and output flow in the CPU			

[4]

3 A variety of network devices can be used to connect computers together.

(a) Complete the following sentences using the most appropriate network device from the list. Your answers must be different in each case.

- an access point
- a modem
- a bridge
- a network interface card
- a hub
- a switch

A device used to connect a Local Area Network (LAN) to another LAN that uses the same protocol is called

A device used to convert a computer's digital signal to an analogue signal for communication is called

A device that connects a number of other devices and sends data to one specific device only is

An item of hardware in a computer that allows a device to connect to a network is

[4]

A router is used to connect a LAN to the internet. A message is sent from the router to another router.

(b) Give the name of the part of the router where the IP addresses are stored.
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..... [1]

(c) Explain how the data from a router is routed.
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..... [5]

4 The HTML of a web page consists of a head section and a body section.

(a) The head section can contain the link to the stylesheet.

Identify **two** other items found in the head section of HTML.

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2 [2]

(b) Explain the purpose of the body section of HTML.

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..... [2]

(c) A stylesheet can contain styles and classes.

Explain the difference between a style and a class.

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..... [2]

Question 5 starts on page 6.

- (b) When a person makes a booking, a ticket will be produced for each person. The ticket will be sent by email and can then be printed out or used on a smartphone to gain entry to the event.

Design a ticket that includes elements for both visual and electronic checking for the forthcoming music event.

[6]

6 Data stored in a computer needs to be protected.

- (a) Describe what is meant by encryption.

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[3]

Due to an issue with Question 6b, the question has been removed from the question paper.

7 A new database system has been set up for a bookshop. Part of a record from the database system is shown. Each field has a validation check which needs to be tested.

(a) For each field identify the most appropriate validation check. Each check must be different. The validation checks for two fields have already been identified; these types of validation check must not be used for the other fields.

Field name	Data	Validation check
ISBN	9781471837951	
Name_of_book	A View of the Castle	<i>Presence check</i>
Purchase_price	16.99	<i>Range check</i>
Year_published	2018	
Date_acquired	31/01/2019	

[3]

(b) The Purchase_price field uses a range check. The prices of books range from 1 to 100.

Identify **three** items of test data which could be used with the Purchase_price field, giving reasons for your choice. The reasons must be different in each case.

Item 1

Reason

.....

Item 2

Reason

.....

Item 3

Reason

.....

[6]

- 8 Autonomous vehicles are being tested on some of the world's roads. These vehicles can travel in convoys with each vehicle following the one in front with a set distance between them. The whole operation is computer controlled. If the vehicle in front slows down, then the following vehicle also slows down to maintain the distance between them.

A proximity sensor is used to detect how close the vehicle is to the vehicle in front.

Describe how the microprocessor would maintain the set distance between the vehicles.

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..... [6]

9 There have been a number of incidents where laptop computers containing highly sensitive data have been left on trains. Manufacturers are now developing new ways of protecting laptop computers and their data.

Discuss the effectiveness of different methods which could be used to protect the data.

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..... [8]

- 10 A student is creating a database for her geography project to show all the earthquakes that occurred in 2019. She has produced part of the database which is shown.

	Country	Magnitude	Depth(km)
	Vanuatu	6.9	26
	Vanuatu	6.7	24
	Indonesia	6.1	29
	Vanuatu	6.7	27.6
	Nepal	4.1	10.2
	Myanmar	6.9	136
	Japan	6.2	9
	Japan	6	8
	Vanuatu	6.4	16
	Japan	7	10
	Ecuador	7.8	20.6
	South Georgia	6.2	14
	Ecuador	6.2	14
	Ecuador	6	10
	Mexico	6	16
	Mexico	6	10
	Vanuatu	7	24

When she has completed her database, she needs to carry out some searches on the data. To search for all the earthquakes with a depth of more than 20 km she will need to type the following search criteria.

Depth(km) >20

- (a) Write the search criteria to find all the earthquakes of a magnitude greater than or equal to 6.5, with a depth less than 15 km.

.....
 [5]

- (b) Give the name of the country that satisfies the search criteria in part (a).

..... [1]

The student has transferred the data into a spreadsheet in order to create a graph.

	A	B	C	D	E	F	G
1	World Earthquakes - 2019						
2	Country	Magnitude	Depth(km)				
3	Vanuatu	6.9	26			Vanuatu	5
4	Vanuatu	6.7	24			Indonesia	1
5	Indonesia	6.1	29			Nepal	1
6	Vanuatu	6.7	27.6			Myanmar	1
7	Nepal	4.1	10.2			Japan	3
8	Myanmar	6.9	136			Ecuador	3
9	Japan	6.2	9			South Georgia	1
10	Japan	6	8			Mexico	2
11	Vanuatu	6.4	16				
12	Japan	7	10				
13	Ecuador	7.8	20.6				
14	South Georgia	6.2	14				
15	Ecuador	6.2	14				
16	Ecuador	6	10				
17	Mexico	6	16				
18	Mexico	6	10				
19	Vanuatu	7	24				

(c) (i) She has entered a formula in cell G3. The formula is

COUNTIF(A\$3:A\$19,F3)

Explain in detail what the formula in G3 does. Include in your answer an explanation of the use of the \$ sign.

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..... [4]

- (ii) The student is creating an appropriate chart/graph of the data in cells F3 to G10.

Write down the steps she needs to take to produce a chart/graph of the data on the same sheet. Your answer must include examples of an appropriate title and labels.

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..... [6]

- 11 Two types of documentation are written when a new computer system is created. Some items only appear in the technical documentation and other items only in the user documentation whereas some items appear in both.

Tick (✓) whether the following items only appear in **Technical documentation**, only appear in **User documentation** or appear in **Both**.

Item	Technical documentation (✓)	User documentation (✓)	Both (✓)
Purpose of the system			
How to save a file			
System flowchart			
Software requirements			
List of variables			
Input format			

[6]

12 A teacher is teaching students about history using a virtual reality (VR) system.

(a) Identify **three** devices that could be used with a VR system.

- 1
- 2
- 3 [3]

(b) The teacher carefully monitors the students' use of the VR system. She only allows them 20 minutes on the device before taking a break. This is to ensure that they remain healthy whilst using it.

Identify **three** health problems associated with the prolonged use of VR systems.

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

- (c) The teacher asks the students to create a presentation for their parents to explain to them about the history of their town.

Describe the features that the students must include to make the presentation appeal to the adults.

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..... [4]

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