Cambridge Assessment International Education

Cambridge International AS & A Level

CANDIDATE NAME	

CENTRE NUMBER						CANDIDATE NUMBER				

8998142284

INFORMATION TECHNOLOGY **9626/13**

Paper 1 Theory **October/November 2020**

1 hour 45 minutes

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.
- Calculators must **not** be used in this paper.

INFORMATION

- The total mark for this paper is 90.
- The number of marks for each question or part question is shown in brackets [ ].

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

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1 **(a)** Tick the most accurate statement regarding input devices.

	✓
A touch screen is easier to use than a keyboard for inputting large amounts of text	
Using a keyboard is the most efficient method of moving a file from one folder to another	
A scanner is an input device used for inputting hard copy documents	
A motor is an input device used for inputting physical variables in a control system	

[1]

(b) Tick the most accurate statement regarding output devices.

	✓
A sensor is an output device used as an actuator in a control system	
A dot matrix printer is the quickest printer for outputting large amounts of text	
A webcam is an output device used to display moving images	
An inkjet printer can be used to output high-quality photographs	

[1]

(c) Hard disk drives, magnetic tape drives and solid-state drives (SSD) are often referred to as secondary storage devices whereas RAM and ROM are often referred to as primary storage devices.

Explain why computers need secondary storage devices.

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2 **(a)** Tick the statement which most accurately refers to the results of using utility software.

	✓
Lossless compression reduces the number of bits by increasing redundant data	
Some information is lost in lossless compression	
Lossy compression reduces the number of bits by identifying unnecessary information and removing it	
Disk defragmentation organises the contents of the disk into the largest number of contiguous regions	

[1]

(b) Tick the statement which most accurately refers to the properties of a hard disk.

	✓
Data access is faster on a hard disk with fragmented files than on a defragmented hard disk	
Disk formatting prepares a data storage device for initial use	
The first stage of formatting is high-level formatting followed by low-level formatting	
Disk partitioning makes the data storage device invisible to an operating system	

[1]

(c) A type of utility software enables files to be deleted.

Explain how the delete utility works and how files can be recovered even after they appear to have been deleted.

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3 A city suffers from the lack of fresh air because of its heavy traffic. A local government agency uses sensors to monitor the level of pollution in the air. The computer system monitors a number of physical variables.

(a) Describe how this system collects and processes this data.

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(b) Compare and contrast the use of monitoring systems with the use of control systems.

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4 Li has just discovered his printer is not responding when he sends a document to print.

Describe how the following components of an expert system are used to diagnose faults with the printer.

(a) User interface

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(b) Inference engine

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(c) Knowledge base

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5 Louise, a teacher, has been asked to write a text book and will need to submit a sample chapter to the publishers. Before she submits this chapter, she wants to proofread it.

Describe how she should visually proofread this chapter.

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6 DVDs and blu-ray discs are optical media which store data and can be used by computers.

Evaluate, by weighing up the advantages and disadvantages, the use of blu-ray discs compared to DVDs for storing computer data.

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7 Define the following types of malware including a description of what each type does.

(a) Rootkit

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(b) Malicious bots

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(c) Ransomware

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8 Describe the differences between a compiler and an interpreter.

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9 Describe, in detail, the characteristics of a WAN and a LAN.

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10 Below are tables from a university database of Metallurgy students. Relationships link the tables.

Students

Studentid	Phone	Second_name
A5384	01217421600	Bhatti
A6528	01213689624	Schmidt
B7238	01214016620	Jones
A8946	01214006451	Gonzales
D9476	01214016620	Jones

Courses

Studentid	Subject	Teacher_code
A5384	Geology of metals	SMI
A6528	Electrochemical Metallurgy	LOU
B7238	Geology of metals	RIC
A6528	Metallography	SAN
D9476	Physical Metallurgy	SAN

Teachers

Teacher_code	Subject 1	Subject 2
LOU	Electrochemical Metallurgy	Metallography
RIC	Geology of metals	Crystallography
SAN	Metallography	Physical Metallurgy
SMI	Electrochemical Metallurgy	Geology of metals
TUR	Crystallography	Geology of metals

(a) Define, exactly, each of the following terms giving examples of the only suitable fields for each, using the tables provided.

(i) Primary key

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(ii) Foreign key

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(iii) Compound key

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(b) Explain, indicating the type of relationship formed, how the relationships were created connecting these tables. You can assume the tables were already populated with data.

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(c) Describe, in detail, the two validation checks that could be carried out on the Studentid field which could **not** be carried out on the Second_name field.

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11 Amir has created a student database query which allows users to type in any name they choose and then the query finds everybody in the database with that name.

Annisa has told him that this is a dynamic parameter query.

Evaluate, by weighing up the advantages and disadvantages, dynamic parameter queries compared with static parameter queries.

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Please turn over for Question 12.

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12 There are a number of computers which a school is planning to network.

Discuss the advantages and disadvantages, to the students, of having a computer network.

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